REPORT RESUMES

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DORMS AT BERKELEY, AN ENVIRONMENTAL ANALYSIS.
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DESCRIPTORS- *DORMITORIES, *ENVIRONMENTAL RESEARCH, *FURNITURE ARRANGEMENT, *PHYSICAL DESIGN NEEDS, *PSYCHOLOGICAL DESIGN NEEDS,

THIS MONOGRAPH DEALS WITH AN ENVIRONMENTAL ANALYSIS OF THE DORMS AT BERKELEY AND IS ORGANIZED INTO FIVE CHAPTERS. CHAPTER ONE REVIEWS SOME OF THE CONDITIONS THAT HAVE PROMPTED ARCHITECTS AND PLANNERS TO LOOK FOR NEW APPROACHES TO THEIR WORK AND SKETCHES THE CONTEXT OF THE BERKELEY CASE STUDY. CHAPTER TWO DESCRIBES THE HISTORY AND SETTING OF INSTITUTIONAL HOUSING AT BERKELEY. CHAPTER THREE DISCUSSES THE ANALYSIS USED AND FINDINGS DEVELOPED REGARDING STUDENT LIFE IN THE HIGH-RISE DORM ENVIRONMENT. THIS MATERIAL COMES PRIMARILY FROM THE STUDIES OF THE BERKELEY DORMITORIES AND FROM A SURVEY OF OTHER INSTITUTIONS. THE CHAPTER PRESENTS A SERIES OF DESIGN ISSUES DEVELOPED FROM THE RESEARCH. EACH ISSUE SUMS UP AN AREA OF CONFLICT BETWEEN WHAT STUDENT LIVING SEEMS TO REQUIRE OF THE PHYSICAL ENVIRONMENT AND WHAT THAT ENVIRONMENT ACTUALLY PROVIDES. CHAPTER FOUR PRESENTS SOME CONCEPTUAL SOLUTIONS TO THE ISSUES DISCUSSED IN THE PREVIOUS CHAPTER. CHAPTER FIVE DISCUSSES METHODS FOR ANALYZING HOW A PHYSICAL ENVIRONMENT IS USED. THE SETTING, TECHNIQUES, AND THE PROBLEMS AND LIMITATIONS ARE DEALT WITH. IT IS THE INTENTION OF THE AUTHORS TO REACH, THROUGH THE CASE STUDY APPROACH, A BROAD SPECTRUM OF PEOPLE AND PROFESSIONS RESPONSIBLE FOR SHAPING INSTITUTIONAL PROGRAMS AND ENVIRONMENTS. (RK)

VAN DER RYN · SILVERSTEIN

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DORMS
AT BERKELEY

an environmental analysis

EF 001397

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The Center for Planning and Development Research was established in 1962 to conduct research in city and regional planning and related social and technical processes.

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Preface

THIS MONOGRAPH is organized into five chapters. Chapter I reviews some of the conditions that have prompted architects and planners to look for new approaches to their work, and sketches the context of our study. Chapter II describes the history and setting of institutional housing at Berkeley.

Chapter III discusses our analysis and findings regarding student life in the high-rise dorm environment. The material comes primarily from our studies of the Berkeley dormitories and from a survey of other institutions. The chapter presents a series of design issues developed in our research. Each issue sums up an area of conflict between what student living seems to require of the physical environment and what that environment actually provides.

Chapter IV presents some conceptual solutions to the issues discussed in the previous chapter.

Chapter V discusses methods for analyzing how a physical environment is used. Rather than undertaking a comprehensive treatment of method, we have tried to limit ourselves to a direct account of the setting in which we worked; the techniques actually used in the case study; problems and limitations connected with their use. Design issues were developed from observation and activity log data, student interviews, visits to other campuses, and a review of college housing literature. The results provide descriptive pictures of the interaction between student living and the high-rise dorm. These descriptions are coupled with hard data when they are available and reliable.

Our analysis focuses on Berkeley as a case study, but many readers will find what we describe to be true of similar dorm types in their own campuses and experience. It is our intention to reach, through the case study approach, a broad spectrum of people and professions responsible for shaping institutional programs and environments.

Although it is unique in certain ways, Berkeley is an archetype for the large urban-centered "multiversities" maturing and expanding around the country. We believe this report is relevant to housing experiences on large campuses; the small but expanding campus can also learn from the Berkeley experience.

A few words about the origin of this study: Beginning in 1962, Sim Van der Ryn initiated problem exercises in a freshman architectural course with the aim of making students aware of the human content of design problems. The students were involved in field analysis of how buildings and open spaces function. Several student projects were aimed at the residence halls. In the spring of 1965 Van der Ryn organized a seminar which focused on developing and testing ways of evaluating building environments. Problems in student living conditions, particularly the residence halls, were prominant among student grievances during the 1964–65 Berkeley student protest movement. Thus, the residence halls appeared as a particularly relevant and accessible case study. Most of the field work reported in this book was done in the Spring of 1965 by six students in the "Needs Analysis" seminar. A grant from the Educational Facilities Laboratories made it possible to continue analysis over the Summer of 1965. Members

of the summer research team were: Sim Van der Ryn, principal investigator, Murray Silverstein, Peter Drake, Beth Falor, Richard Palmer, and Virginia Ayers, research assistants, and psychologist Gary Winkel, consultant. An additional grant from EFL made it possible to write and publish this monograph.

Peter Drake provided many insights into field research techniques and the interpretation of data. He is largely responsible for the application of the activity-log technique. Beth Falor through her enthusiasm made easy contact with many dorm residents and housing staff. Her research on the views of housing administrators was most important in interpreting many issues. Richard Palmer, now the manager of University Student Cooperative Association, brought to the team a pragmatic sense of student-housing problems from the perspective of both student and administrator. Virginia Ayers, who worked closely with us on the research team, was responsible for collating much of our data, and researched background materials on the issues. Wendy Williams provided valuable editorial assistance. Dr. Gary Winkel participated in our discussions, helped to design research methods, and produced an early draft of Chapter V of this book.

We are indebted to William L. C. Wheaton, Melvin M. Webber and Allan Temko for their careful review of the manuscript and many excellent suggestions on content and organization. We wish to thank Robert Sommer and Christopher Alexander for their valuable suggestions during the course of the study.

Our special thanks go to Jonathan King, Vice President and Treasurer of Educational Facilities Laboratories, for his suggestions towards putting our findings in readable form.

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CHAPTER I

College Housing and Design Analysis

The Problem

ACCORDING TO recent projections, colleges and universities will have to provide residential facilities for an additional million and a half students by 1970. The cost of this construction will be approximately four and a half billion dollars. In particular, large, publicly supported universities can be expected to account for much of the growth. The University of California alone is currently investing about $25,000,000 a year to house some of its increasing enrollment.

Administrators responsible for housing programs are caught in a three-way squeeze: an ever-increasing number of students are looking for housing; a growing proportion of these students are limited financially; construction costs are rising faster than real incomes. Administrators have been so preoccupied with problems of growth, costs, and budgets that basic assumptions of residence hall design have seldom been questioned. There is no feedback channel between planning assumptions and building use. Existing facilities have not been systematically evaluated to determine whether they are effectively providing the kind of environment students want and need. Few architects have attempted to understand and interpret the physical implications of changing patterns of student living.

Among administrators there is much talk of the need for university-operated housing to provide the student with a humane, "educationally enriching" experience. Yet, these ideals have seldom found their way into bricks and mortar. Despite good intentions, when the time comes to make qualitative judgments about new facilities, ideals are often forgotten. Perhaps this is because there are few precise criteria to act on other than construction cost. Large universities make investments in physical facilities that run into hundreds of millions of dollars. It is ironic that these institutions, devoted in part to the enrichment of the individual, have so rarely concerned themselves with what research psychiatrist Dr. Humphrey Osmond calls "the reciprocal molding" that takes place between man and the physical environment. In the search for architectural quality, many universities have relied on star designers, but it is difficult for even the greatest talent and intuition to be effective where the level of organized intelligence about the problem is so inadequate.

In this report our first objective is to present an account of the problems that students encounter with one kind of housing environment, the high-rise dorm. We have sketched out ways in which a set of policy, program, and building decisions affect the activities of the student user.

This study focuses on the qualitative aspects of student-housing design. We are concerned with a definition of functionalism that goes beyond quantitative standards of building performance such as temperature, lighting levels, and noise control. Functionalist programmers often neglect —because they cannot be "clearly demonstrated" —just those criteria that are most important to human use.

We were concerned with developing an approach to architectural programming that goes beyond a specification of square footage requirements. The typical program treats human behavior superficially. Space-use and square-footage requirements are superimposed onto complex social patterns and activities. Our focus is on the silent partner in the design process—the user affected by design decisions. We have found that some of the most cherished assumptions of administrators and designers are inconsistent with the actual preferences and activity patterns of student users of university-sponsored housing.

How can we assess the human, qualitative impact of a physical environment for a group of users? Industrial and human engineering have made significant strides in bringing stable, predictable information to the designer of microenvironments for precisely defined tasks. Where the consequences of poor design assumptions can be shown to be critical in measurable terms, such as in the design of a space capsule, or supersonic jet's instrument panel, measures of environmental effectiveness have been found.

But measuring the effectiveness of a complex system designed for living and learning is a more difficult problem. What are the consequences of poor design assumptions for student life? It may be possible to relate features of the housing environment to rough measures of student satisfaction and performance such as grades, turnover rates, friendship, stress, and so forth. However, in this study it was not possible to develop adequate long-term measures of student performance related to housing. Thus, we relied on describing and evaluating activities and processes as they took place in the dormitory setting.

Five methods were employed in developing data for this report—observation, interview, questionnaire, student "diary" or activity log, and literature search. In general, data were collected in three stages. In the first stage, observation, interview, and literature search were instigated by the researchers to identify and clarify problem issues. Initial hypotheses came from conversations with students and newspaper reports. Second, a more directed observation and interview program was coupled with a user questionnaire to establish qualitative descriptions of student activity patterns in the dorm. Finally, in the third stage, questionnaires and activity logs kept by residents themselves were employed to quantify certain types of behavior and to test hypotheses. On the next page is a summary of research techniques used.

Environmental Analysis and Systematic Design

Why analyze environments? There are four reasons. First, environmental analysis has an evaluative function. Establishing a building's actual use provides a basis for assessing the policies and program which determined its form. Evaluation may reveal conflicts between owner's goals and those of the users. Second, analysis has an informative function. It provides organized information for the designer and reduces the realm of uncertainty in which he works. Third, environmental analysis has an innovative role to play in the design process. By unlocking relationships between form and function, environmental analysis opens the way for innovation in programming and design. Last, it has a scientific function. Analysis adds to our knowledge about the relationship of individuals to their environment. As scientific research it communicates hypotheses which may

SUMMARY: RESEARCH TECHNIQUES

	Identify issues	*Qualify use of environment*	*Quantify use of environment*
OBSERVATION	informal reconnaissance of building complex—written notes	structured observations of hallway behavior—15 two-hour periods	
INTERVIEW	non-directed interviews with students—tape recorded	40 directed interviews of students in their own rooms	
QUESTIONNAIRE		open-ended questionnaire to determine range of problem	specific questions on use and furnishings of the student's room—115 respondents
ACTIVITY LOG			80 student-kept diaries over 4 days, noting use of space and equipment
LITERATURE SEARCH	books, journals, local newspapers, reports	directed search of comparative descriptive literature portraying situation on other campuses	

be tested and specifies methods for constructing and testing hypotheses.

In these four ways, environmental analysis plays a part in advancing more rational design processes which are essential to the job of creating facilities to meet complex social and institutional needs.

Several models of the problem-solving process have recognized the role of analysis and evaluation for design. Mathematician G. Polya, in his book *How to Solve It,* sketches out the four phases of problem-solving as (1) understanding the problem, (2) making a plan, (3) carrying out the plan, and (4) looking back and evaluating the solution. The role of analysis in understanding the problem and evaluating the solution is clear. In fact, Polya's four steps are the core for any rational design approach. We note that these four steps follow a cyclical as well as a linear pattern. In other words, the solution to any problem is found through a series of successive approximations—each 4-step cycle moving the design model closer to a solution.

A rational design procedure displays six characteristics:

(1) Problem objectives are spelled out clearly. Only when a design problem is clearly defined and solution objectives are described can a design proposal be evaluated. If objectives are vague and non-operational, there is no way of telling if they are being met.

(2) Alternative means to satisfy objectives are developed. Design alternatives imply different conceptual ways of meeting a problem. Often a range of solutions are displayed which, upon examination, are only superficially different. Such solutions are only variations on a common theme and do not offer real alternatives.

(3) There are communicable standards of judgment for choosing between alternatives. The criterion or rule for judgment is neutral since it merely specifies the ground rules for weighing alternatives. Design criteria are both subjective and objective. They are prescriptive as well as predictive. Subjective values—what one wants—determine criteria as well as the predictive system which indicates the likely consequences of a particular course of action. Alain Enthoven, a key figure in the application of systems analysis to Defense operations, discusses this phase of his work: "Where the criterion is not obvious, we search around for alternative criteria. At the end of the line, of course, there is always a value judgment to be made. There has to be a 'leap' from the data to the decisions. But good analysis can shorten the leap."

(4) Components of the problem are joined in a system or model which can be described and manipulated abstractly. This implies that solutions be structured and relations between their parts made clear. Models abstract information about the world. They range from highly abstract mathematical relationships to scaled constructions of physical settings, depending on the kind of information involved. Every model is premised on certain assumptions regarding operations in the real world. When these assumptions are accurate we get an idea of how the solution will work in reality. The design can then be manipulated and modified in the conceptual stage.

(5) Methods employed during the problem-solving process are communicable. Each step of the design process employs a set of rules, a heuristic, for problem solving. The heuristic can be communicated along with the reasoning behind it, and does not remain part of the designer's secret equipment. Making methods and reasoning explicit helps insure that, like science, design becomes an on-going, cumulative operation.

(6) Phases of the problem-solving process are reiterated and solutions modified until a satisfactory product is found. Iteration in design means simply that solutions, whether stated abstractly or in bricks and mortar, are constantly tested for validity. Revisions are made and information recycled. Architects Christopher Alexander and Barry Poyner write that design proposals contain a collection of hypotheses and "like the task of forming any scientific hypothesis . . . a good hypothesis can't be invented overnight; it can be created only by refinement over many years, and by many independent observers."

We have discussed the need for a fresh approach to architectural programming coupled with the analysis of problems in existing environments. This discussion has been set in the context of rational design procedures. Analysis and evaluation have been portrayed as integral parts of the problem-solving process. Three conditions contribute to the need for more rational and systematic traditional programming and design procedures. These conditions are (1) the separation of the user from design decision-making, (2) an innovation lag between human needs and existing architectural forms, and (3) the problems raised by uncertainty and change.

(1) The program behind the Berkeley dormitories did not reflect an accurate assessment of existing facilities in terms of student use, preference or complaints. Lacking such information, the program fell back on an idealized stereotype of what student living is like. Without evaluations of user behavior, the past becomes the only precedent for the future, regardless of whether the past is relevant to today's conditions. In general, the separation of real user needs from the design process has become acute in this century. Institutional clients rely on building committees to advocate the user's point of view. Such committees, however, are often far removed from the needs of those who actually use the building. In the "multi-versity," for example, one agency may be responsible for financing, another for planning, and a third for operating the facility. The dormitory construction program for the State University of New York involves at least five groups of design decision makers, each with organizational loyalties, concerns, and criteria of their own. In such a planning framework, maintaining lines of communication becomes a major effort, and "tunnel vision" dominates the design process. The user is reduced to an ideal in the mind's eye; and, whether he is a college student, secretary or hospital patient, his environmental needs remain obscure to client and designer.

(2) The second condition is the lag between social change, its expression in programs, and their ultimate translation into an architecture capable of accommodating new needs and values. In large institutions the lead time required to plan, program, and budget new facilities is often a decade or more. In the last ten years Berkeley has undergone extensive social and physical change, some of it unforeseeable to the best prognosticator. These conditions suggest the creation of an architecture that can adapt to changing needs and values, and programming that takes into account emerging social tendencies.

(3) The lag in innovation between social need and current achitectural concepts is closely related to the problems of uncertainty in an extraordinarily fluid society. When architects work on a scheme they usually develop an image of people doing certain things in certain spaces. They make predictions about how spaces will be used. When it is said that a building "does not work," the intended meaning is that the designer made poor predictions about how it would be used. Conversely, when a building "works," we mean that

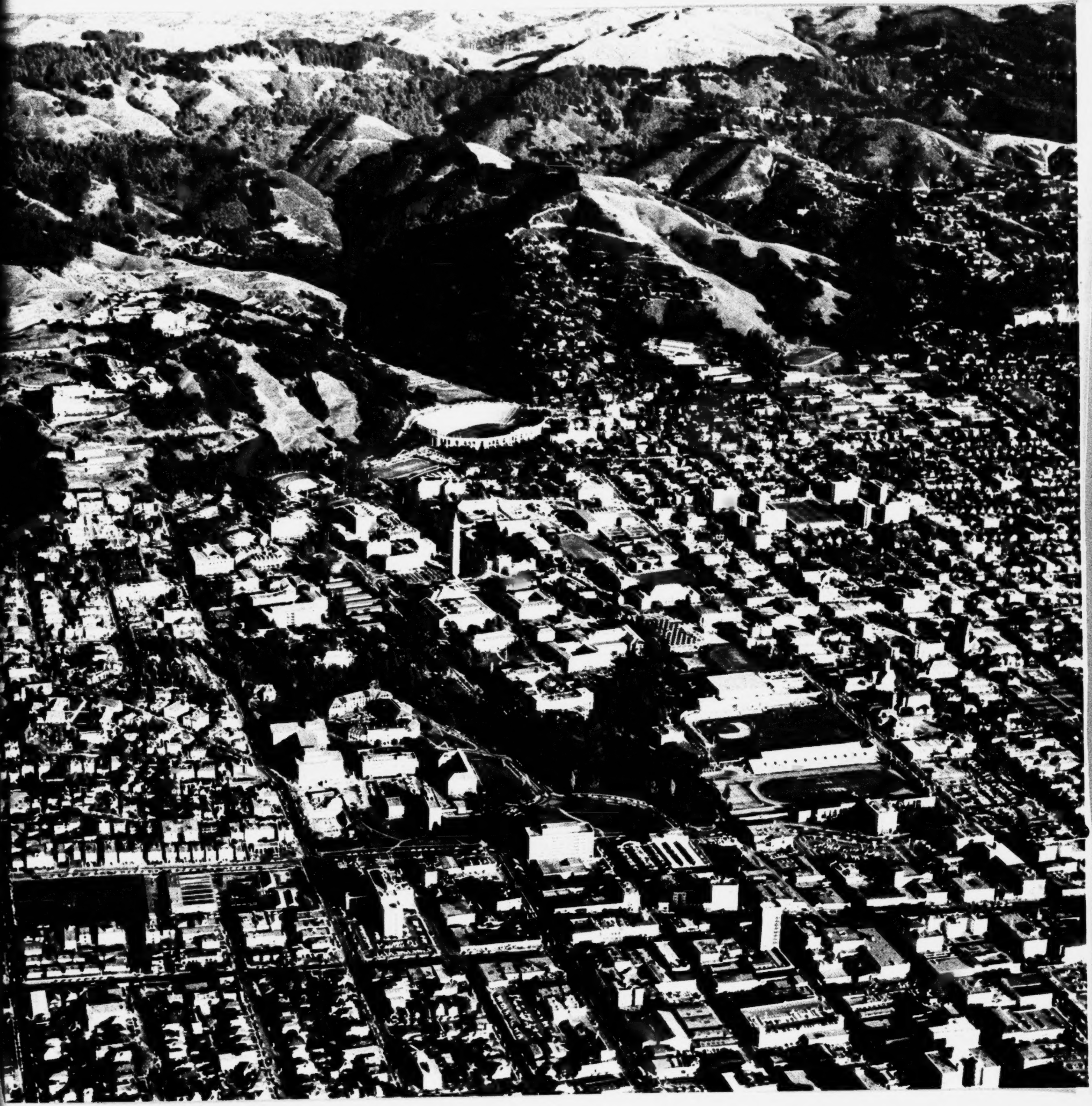
the designer has understood his clients well; his predictions are accurate. In addition, architects are occasionally asked to design spaces for functions not clearly spelled out, while at other times they are forced to acknowledge that certain functions are likely to change. In both cases predictions of specific activity patterns are complicated. In the face of unpredicable outcomes, architects often resort to "flexible" or "multi-purpose" designs. In the dormitory study we found both poor and accurate predictions along with relative indeterminacy. Environmental analysis allows the designer to learn from his mistakes and thus improve his capacities to design predictably. It also helps pinpoint those areas in a problem where "accurate prediction" is not possible or undesirable—where decision making is best left to the initiative of the user. In this report the student room is the clearest example of this point. The architects envisioned how students would use their rooms and came up with a set of decisions regarding wall finish, placement of closet unit, light fixtures, windows and mirror, and type of furnishings. The students complained that the designers had preempted certain decisions rightfully theirs. Discussing dormitories in 1957, Albert Bush Brown wrote, "The function of a room is hardly defined by the name an architect gives it, but rather by the limits of the student's imagination."

We are skeptical of design approaches that rely on totally predictable user responses. Evaluation can suggest which decisions are best left to building users and what physical framework will best facilitate such user participation.

Finally, there is one question that deserves an answer here. During the course of this work, many architects asked, "If you're designers, what business do you have dabbling in sociology, psychology and all of that?"

Specialization within architecture is as inevitable as it is in most other fields. Nevertheless, it is our belief that analyzing an environment, drawing hypotheses from the evidence, and seeing them through in design, are functions that a single group can and should carry all the way. This kind of investigation is a legitimate part of the design process.

There seem to be few social scientists working in areas which are of direct significance to programming and designing the environment. The areas of social and behavioral science closest to environmental analysis are usually considered "applied research," and therefore backwater. It is rare to find a social scientist with a strong instinct for ferreting out the physical implications of social or psychological behavior. Since the kinds of problems we are looking at are within the scope of branches of sociology, psychology and anthropology, we hope that people in these fields will initiate work on their own and in conjunction with architects and design teams. It is a rich area for interdisciplinary action: today we have interdisciplinary talk. If this cooperation is to occur, architects will have to sharpen their analytic skills without trading in their design capacities, while social scientists will need to become more attuned to the psychic and social consequences of building environments. Improvement in the education of architects and social scientists may bring about an integrated, analytic and innovative attack on physical problems.



CHAPTER II

Student Housing at Berkeley

Housing and Housing Policy at the University of California

Berkeley, California, is a city of 111,000, whose residents enjoy both the mild climate and the rich and diversified cultural activities of the San Francisco Bay Area.

Just to the south lies big, industrial Oakland—on clear days one can see the hills of cosmopolitan San Francisco just across the Bay. Berkeley itself stretches from the industrial flatlands near the Bay up into the wooded beauty of the residential Berkeley Hills. Nestled up against those hills is the Berkeley campus of the University of California, oldest and largest of the nine state university campuses. Every fall students (more than 27,000 of them this year) come from all over the world to study and learn here. All of them must find a place to live while they are here: most of them will settle in Berkeley itself.

A 1964 student housing survey, answered by almost all students on the Berkeley campus, gave a complete picture of where students live. Approximately 60% of all students live in the "core area" within a mile of campus. Twelve percent live in housing owned by the University. Of this number, 2,500, or 80%, live in the twelve high-rise towers. More than 45% of the high-rise residents are freshmen, 26% are sophomores, 22% are juniors, and 7% are seniors. Approximately an equal number of men and women reside in the high-rise dorms, although women under 21 are required to obtain parental approval to live in housing which does not meet the University's physical standards and disciplinary rules. Another 3% of all students live in University-owned married student housing in Albany, about fifteen minutes from the campus by car. Ten percent of the student body live in fraternities and sororities, while an additional 7% live in approved housing and student cooperatives. Two-thirds of all students live in housing not subject to University regulations. Of this number, approximately 40% live in apartments, 9% live in rooming houses and private homes, 8% share a house, and 8% live with their parents.

In the past decade, a number of changes have occurred in student living patterns at Berkeley. These changes are the result of simple numerical growth, shifts in the composition of the student body, and physical changes in the community. Enrollment at Berkeley has increased from 15,857 in 1954 to 27,500—the upper limit of enrollment set by the Long Range Development Plan. The number of graduate students rose from 24% of the total enrollment in 1954 to 35.2% in 1964. The ratio of men to women has remained relatively stable, as has the ratio of married students. Two out of every three students are men; one out of every five students is married. The median age for seniors is 21, while the median for graduates is 27.

The area surrounding the campus was built fifty to sixty years ago as a community of large, well-built, single-family homes. During the 1920's, as many families moved into hill areas, some of these houses were converted into boarding houses and apartments. This remained the prevailing pattern till the middle 1950's when the solid matrix of pleasant, but often shabby, wooden houses was penetrated by large numbers of cheaply constructed two and three-story apartments, and three complexes of University-owned high-rise dorms which are the subject of this report. The older houses which remain in the core area have been poorly maintained; a recent survey on the south campus area found 69% to be "deficient." Nevertheless, they are prized by many students as symbols of warmth and free-living. They are rarely vacant.

The shift from rooming and boarding house arrangements to apartments has been dramatic. Between 1954 and 1964 the number of apartments in the core area increased by more than 50%—a rate of growth nine times that of the private room supply. The most typical apartment living arrangement finds two students sharing a one bedroom apartment at a cost of about $70 a month each, or four students sharing a two bedroom apartment, renting for about $250. Rents have risen sharply in the past five years; few studio or efficiency units have been built. There is an increasing standardization of unit types, reducing the variety of accommodations. A recent survey found that, in addition to frequent comments about unreasonably high rents, there was significant discontent over poor study conditions and noisy buildings, circumstances which can be partially attributed to economy construction and poor design. Rising rents and the replacement of large, old units by new, high-priced apartment buildings has made it particularly difficult for married students with children to find accommodations close to campus.

The University of California did not build substantial amounts of student housing until World War II, seventy-seven years after its founding. A policy of not taking responsibility for student housing was set by the Organic Act of 1868 which established the University. This policy remained relatively unchanged as long as the Berkeley community was able to provide adequate private housing. For many years the University's housing role was limited to liaison between landlords and students.

The Regents authorized public funds for student housing for the first time in 1945. However, for a number of years planning and building seemed to take place with few formal guidelines. Problems of financing pre-occupied the administration, and major housing construction programs were delayed until the early fifties. One informal guideline came into being at this time—the University was to provide housing for 25% of its students. The first prototype residence hall was built on the Davis campus in 1951, but it was not until 1957 that a statewide residence hall program was set. The Berkeley Committee on Living Accommodations and Residence Halls was appointed by the Chancellor in 1954. Design and construction of residence halls were guided by a study produced by the Statewide Office of Architects and Engineers, stating,

> It shall be the basic philosophy of university residence halls to provide more than food and shelter. The residences must create in the students an atmosphere of respect and pride in their surroundings. They should foster stable standards of conduct and promote harmonious group life all contributing toward the broad education of the student.

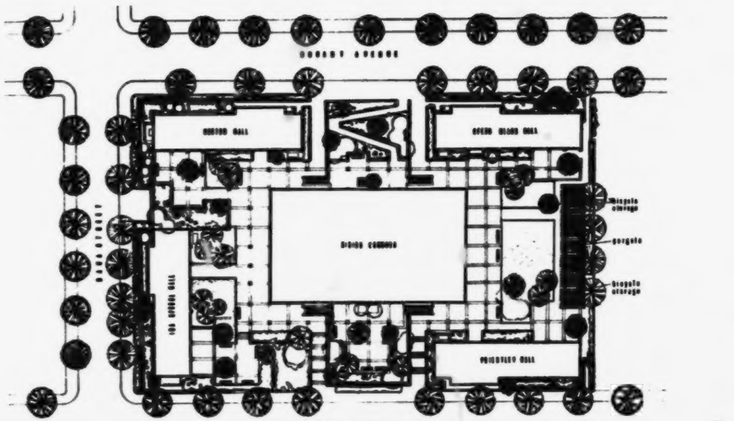
The report did not specify ways of implementing this philosophy.

In 1962 and 1963 several studies analyzing housing needs from a demographic and financial point of view pointed to future difficulties and the need for comprehnesive planning. In 1963 the Vice-President for Business appointed an Ad Hoc Committee on Residence Hall Operations. The objective of the committee was to study fundamental questions of program, administrative structure, operations and construction primarily in relation to costs. The Committee's report, accepted by The Regents in 1964, recommended a number of administrative changes in the housing program and suggested that additional construction be delayed until an in-depth analysis of the entire program was undertaken, including a thorough student-consumer research program. This resulted in new studies aimed at establishing student housing preferences and the availability, cost, and variety of accommodations on each campus. A market research consultant designed an eight-page questionnaire which was mailed to 4,000 students at Berkeley, half of whom responded. On the basis of these studies, a comprehensive Housing Report was submitted to The Regents in 1965. Among the recommendations the following points were made:

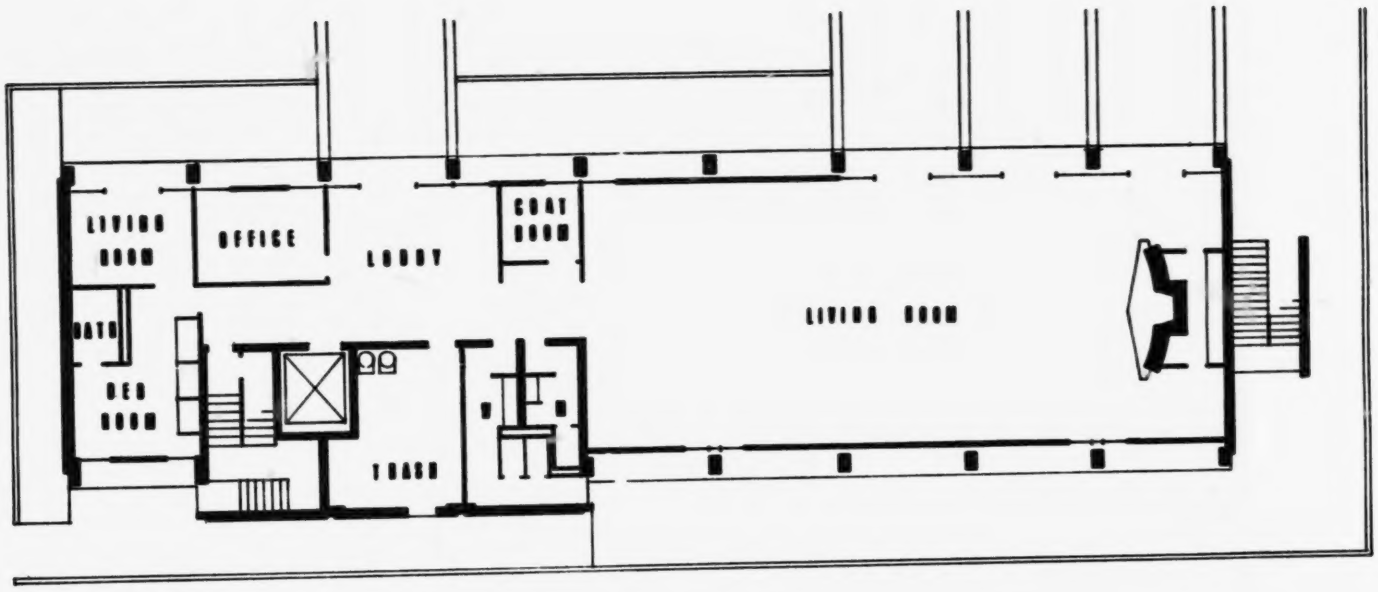
1. Adequate housing at reasonable prices within an acceptable distance of the campus should be provided. Criteria of adequacy, cost and distance were defined.
2. The University should build housing only to the extent that the community does not provide what the student market requires.
3. To meet student needs, the University must provide a diversity of accommodations economically; these accommodations should not neglect social and cultural programs supportive of the University's educational aims.
4. Student housing should have as few rules as possible.
5. Housing planning will have to be responsive to the conditions at each campus; however, overall planning should remain on a University-wide basis.
6. The University should concentrate its efforts to provide low-cost housing for students through a combination of grants-in-aid, private market incentives, and design to reduce construction costs.
7. Long-range planning is essential.

The Regents did not adopt the report or its campus-by-campus recommendations. Instead, they undertook positive action in authorizing a $600,000 research and development project aimed at producing a construction system responsive to a broad spectrum of student housing requirements, while reducing housing cost per student from $6,000 to $4,500. This project, supported with funds from Educational Facilities Laboratory and the University, is now in its preliminary stage. Thus, housing policy at the University-wide level and at Berkeley is in a state of flux. Whatever goals do exist must be extrapolated from past statements and actions of The Regents, the governing body of the University. One student of the situation, Charles Turner, identified the following goals:

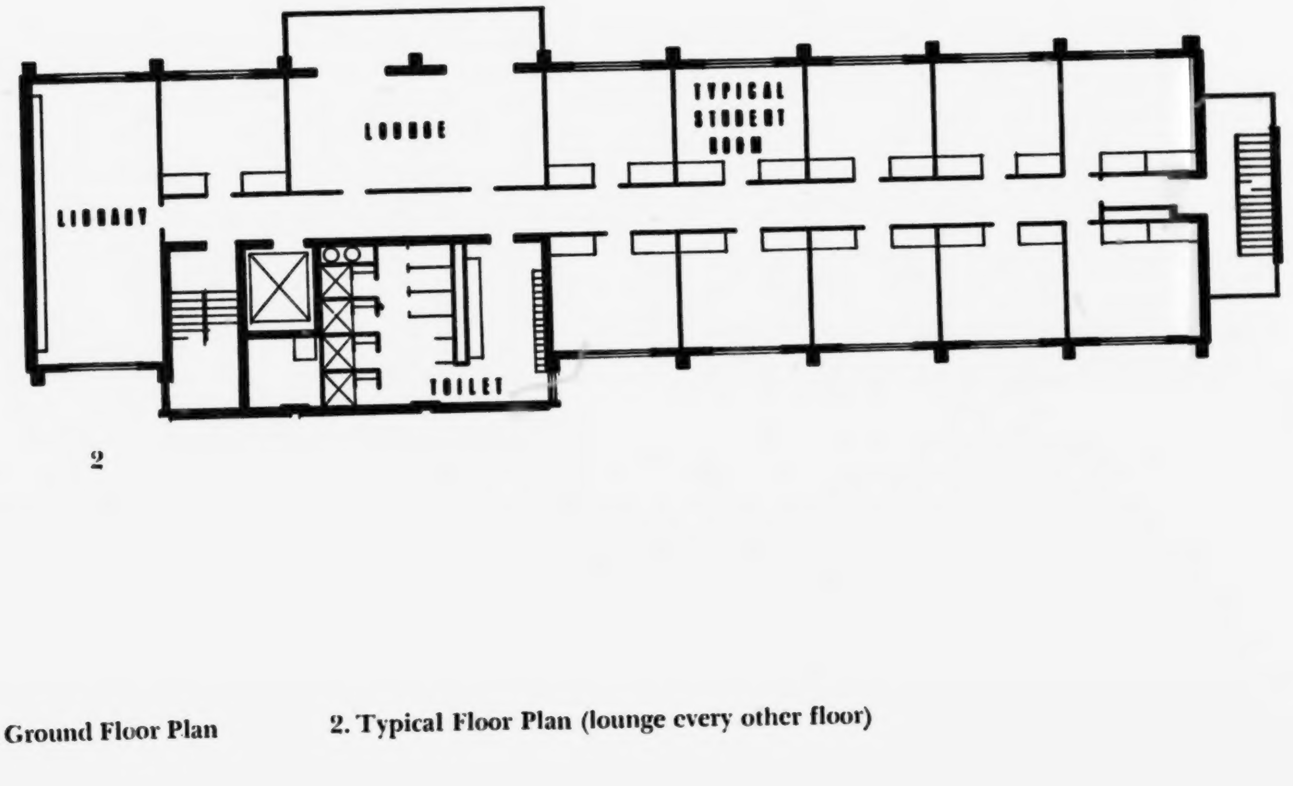
1. The provision, both by private and public sources, of shelter that is adequate, in terms of health and comfort at prices students can afford, and located in a way that will contribute to the students' social life on the campus and the academic purposes of both the University and the student.
2. The provision of regulated, adult-supervised living environment for students under 21 years of age, whose parents request such an environment.
3. The provision of University-operated dormitories that support the foregoing goals and yet minimize investment of University funds, physical obsolescence, and cost of the building.


DURANT AVENUE
NORTON HALL
SPENS BLACK HALL
DANA STREET
DINING COMMONS
IDA SPROUL HALL
bicycle storage
pergola
bicycle storage
PRIESTLEY HALL
CHANNING STREET
scale in feet

Site Plan


LIVING ROOM
OFFICE
LOBBY
COAT ROOM
LIVING ROOM
BATH
BED ROOM
TRASH

1


LOUNGE
TYPICAL STUDENT ROOM
LIBRARY
TOILET

2

1. Ground Floor Plan **2. Typical Floor Plan (lounge every other floor)**

The Berkeley Dorms

The high-rise dormitories at Berkeley are the subject of this report. In Summer, 1956, a design competition was held among seven architectural firms. The program, drawn up for the University by Architect John Lyon Reid, specified that 800 students were to be housed in four self-contained units of 200 each on a 2.7 acre site, one block south of the Berkeley campus. Each smaller unit was to contain necessary services and public rooms, but the four units were to appear as one building group. Each building was to be planned so that smaller social groups of forty or fifty students would form within the unit of 200. Living room, library, and date room were to be included as "necessary services" in each building. "Enrichment of student life" and maintenance of "the tradition of residential architecture and the residential character of the neighborhood" were listed as important objectives in the design program. The entry from the architectural firm of Warnecke and Warnecke was unanimously selected by a jury of designers and University officials. The jury examined each entry with particular reference to three design issues:

1. Utilization of the site, orientation, and relation of the whole to the neighborhood and to the University.
2. Organization of the separate units and their interrelation.
3. The organization and plan of the common facilities and service areas.

The jury called the Warnecke plan "an excellent solution of brilliant simplicity . . . and one which is in complete harmony with the objectives and character of the University as a whole . . ." The Warnecke scheme placed four self-contained, 9-story buildings on the periphery of the site, in "pinwheel" fashion. A continuous covered walkway surrounds the central building containing dining commons on the ground level and recreation rooms, courts, offices, and trunk storage on the lower level. The covered walkway links the central commons with the residence units. The main floor of each unit is divided into lobby, main lounge or "living room," library, and three multi-purpose rooms (now called date rooms). The eight floors above house 210 students in 12 double rooms per floor. Each room is approximately 14′ × 12′, with a picture window and two fixed closets. A common bathroom serves each floor.

Two groups of four halls plus dining commons were to be built simultaneously. Plans called for the two building groups to be separated by one block, which was to be developed as a two-level parking structure with a playing field on the top. The two building groups, referred to as Units I and II, each cover 119,084 square feet, at the cost of $19 per square foot. The structures are reinforced concrete with colored metal curtain walls and cast stone grills on the exterior wall of the utility rooms.

Units I and II were scheduled for completion by Fall, 1959, at an estimated cost of $10,300,000, financed by an HHFA loan, state appropriations, University funds, and $723,000 in gifts.

In March, 1961, the University Regents announced plans to build Unit III. Construction began in January, 1962, with only slight design modification of Units I and II (for example, the roof on the dining commons became flat rather than curved). With the completion of Unit III, 13% of the student body was housed by the University; there were plans for three more Units south of campus and two on the north side.

In spite of long waiting lists in the Fall of 1963, many students chose to move out of the dorms in the Spring semester. The Housing Office cited three reasons for Spring vacancy rates: students leaving the University, pledging fraternity and sorority houses, and moving to cheaper housing.

By February, 1965 the vacancy rate rose to a critical 10%. Vacancies had never been above 1% in the Fall semester, so the University and local press interviewed residents and former residents to discover the cause. Press interviews indicated that women preferred the amenities of apartment life to the general regimentation and lack of privacy and freedom found in the residence halls. The entire complex of regulations concerning served meals, compulsory social dues and house meetings, bed-making, and room checks was cited as causes for the vacancies.

At the same time, similar dorms on the Riverside and UCLA campuses were experiencing vacancy problems. Representatives of the University attributed this to Spring fraternity-sorority rushing. Student newspapers, on the other hand, cited "lockout regulations, bad food, irksome rules, and noise" as the chief reasons.

In any case, plans for building more of the same type of dormitories were reconsidered. To combat the immediate problem of vacancy rates, students were asked to sign one-year living contracts. As might be expected, rumblings of discontent continued. The following pages are an analysis of this discontent, and the general quality of student living in the high-rise dorm.

1. dorm, campus, and town.

2. dorm entrance looking towards the "living room."

3. a typical student room.

CHAPTER III

Findings and Design Issues

The Institutional Syndrome

A recent news item in the *San Francisco Chronicle,* headlined *Freedom is Your Very Own Doorbell,*[1] pointed up the growing number of college girls on the Berkeley campus who are leaving University-approved housing to find a "place of their own." Reporting on the University's high-rise dormitories, the article went on, "The food is purported to be adequate, the rooms are handsomely furnished, and yet for reasons known only to the students the residents of the halls squirm uncomfortably under the epithet of 'dormies.' "

We have tried to uncover the reasons "known only to students" underlying discontent with their environment. As we shall see, they comprise a complex and interrelated set of conditions.

"The dormitory looks institutional." We asked a group of students to explain more carefully what they meant by this. Here is a sample of the responses:

> "They stick out like a sore thumb. When I first came to Berkeley I knew, without asking, that they were dorms; Berkeley is such a lively place, but they looked so sad."
>
> ". . . uniform patterns of living and the desire of everyone to break away from these patterns."
>
> ". . . a lack of feeling of belonging, of personal involvement in the building or the functions it houses. . ."
>
> ". . . suppression of individuality . . ."
>
> " 'efficient and rational,' but it's all a front . . ."
>
> "attempt to 'rationalize' the environment to the point where it drives you mad—at which point is it really 'functional'?"
>
> ". . . long corridors particularly set the scene . . ."

One student felt that the social or commons spaces were "usually the most awkward, bland and uncomfortable . . . there is usually no chance for different personalities to find different ways of 'doing things'." He suggested that the architect "check out the way people interact at parks, beaches, carnivals, and on slum stoops for a surprise."

"Institutionalism" in a word sums up all the signs and symptoms occurring together, that characterize what's wrong with the dormitory environment. It is in this sense that we refer to the institutional syndrome. In programmatic and physical terms, the institutional syndrome results in an extraordinary lack of individual choice for the resident. This condition overlaps with all the issues we will discuss. In fact, our entire discussion of activities attempts to define areas of reasonable student choice within a physical setting. The dorm provides housing and other services for large numbers of people; but in the process it reduces a student's options, and constrains what he does and how he does it.

This point was made by dorm residents in a letter to the *Daily Californian:*

> "In actuality, dorm life produces needless restrictions and stipulations which completely stifle and enrage the residents. We are bound by a set of rules

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[1] *San Francisco Sunday Chronicle and Examiner,* May 1, 1966, p. 28.

issued by the University. . . . Somehow these rules have been enforced to a ludicrous 'T.' We suggest that this is the crux of the whole problem. These rules affect all forms of dormitory life: our time, our money, our morals—which in turn affect our grades and dispositions."[2]

This is the modern institutional dilemma. How can human values be respected while processing and providing service for masses of people? A humanist view in architecture holds that individuals are responsible for their own development; they must define and meet needs for themselves, and so must influence the forms by which they live. Important physical design problems lie in structuring alternatives for users. The designer of environments for mass consumption should create forms reflecting a diversity of needs and goals. A building form should be responsive to its users on their own terms.

Since the institutional syndrome offers an interpretation for the issues to be presented, we will use this opportunity to summarize and integrate our findings. We will discuss three closely related problem areas.

The first revolves around questions of policy and physical form. What degree of personal choice and responsibility is compatible with managed group living? Can privacy-community conflicts be resolved through design innovation to the satisfaction of both students and administration?

The second problem area involves the effective use of programmed areas. The way in which spaces are used often varies considerably from the program assumptions of owner and architect. It can vary in four ways: frequency and number of users; uses to which the space is put; size of space required for desired activities; and the degree to which it fits its purpose. These are four parameters of space utilization.

The third problem cannot be solved by physical design alone, because it represents a conflict of values requiring changes in basic policy. It is our conclusion that the Berkeley dormitories were programmed on the assumption that there is an ideal student with one schedule, one set of values and activities. These assumptions seldom take into account the environment required for good intellectual performance. Since decisions about student housing tend to be made by the business office rather than by academic planners, there is strong temptation to make student housing serve administrative rather than educational objectives.

Personal Choice and Group Living

Choice is linked to physical variety and accessibility in the environment. Since students have different needs, attempts to create a single, standardized, "ideal" environment works to everyone's disadvantage. However, simply creating physical variety does not solve the problem. The student must participate in this process as a variety-making agent. If residents were randomly assigned to rooms, all having different features, the role of the student as a "chooser" would be neglected. The fact is that no matter how pleasing the decor provided by the institution, the occupant who lives with it for many months wants to make his own choices.

". . . the need is a simple one," writes Michael Rossman in his review of *Education at Berkeley,* "the need of human beings to shape their environment, to feel a sense of control and potency . . . For the flavor of our college lives, if not of our American ones, is defined by the plight of the student in his pastel dormitory, who cannot write his name on the walls."[3]

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[2] *Daily Californian,* February 17, 1964.

[3] Rossman, Michael, "Break the Habit—Son of Son of Consensus at Berkeley," *Daily Californian, Weekly Supplement,* May 3, 1966.

"As homey as a Greyhound bus depot": recreation room.

Students complain that the dormitory fails to provide a satisfactory personal environment in three ways. One set of complaints centers around conflicts arising because access by others cannot be controlled. Unwanted or untimely interruptions are the rule, solitude and privacy are virtually non-existent. It is difficult to escape the eyes of others, including one's roommate. Many students have the uncomfortable feeling that their room and possessions are not secure during their absence. A second set of conflicts arises from the inflexibility inherent in the room design. Space which cannot be rearranged, built-in equipment, walls and furnishings which resist temporary change, are conditions which irritate the natural desire to "fix a place up" and make it like home. A third important group of complaints centers on the regulations which the University places on the student's use of the room and furnishings and the manner in which the students exercises his rights of possession.

Students generalize these complaints to include less tangible—but no less real—sources of irritation. One continually hears complaints of "not feeling at home," "institutional atmosphere," and the yearning to be "out on your own."

But provisions for student choice often appear to be at odds with cost and other objectives. Sociologist Ruth Useem, writing in the *Journal of the National Association of Women Deans and Counselors,* notes that, "Investments must be protected, accounted for, managed, and organized. To do this, students have to be managed, too. Rules and regulations have become more depersonalized and, from the point of view of students, seem to be imposed by the professional staff rather than learned from students and self-enforced by students."[4] We think that such student-administration conflicts can be resolved by programs that make explicit the real needs of both parties.

The characteristics of institutional appearance are the result of operating costs, loan requirements, construction and bookkeeping factors, and the inability or unwillingness of programmers to think in terms of student *living* rather than student *housing*. Planned student housing should come closer to simulating the variety of choices in the private housing market. It might be argued that this would lead to a privileged "class" in the residence halls. However, individual consumption can be balanced with contribution to the operation and maintenance of the facility through various services. This is the principle central to the success of cooperative student housing in Berkeley. Regarding the dormitory, Paul Goodman writes, ". . . it is necessarily restrictive, and it is almost invariably more expensive for the students than sharing small apartments or cooperative houses."[5]

Space and Use

In our judgment, universities are building too much of the wrong kinds of space. Space needs are too often established parochially without considering the campus and student life as a single integrated system of people, activities, and buildings.

In the dormitory, we see several areas where space is poorly programmed and of little use. An inordinate amount of circulation space grows out of *in loco parentis* requirements, such as centralized access and circulation. Large "lounge" spaces have been rationalized by housing administrators as necessary for "group programs" (one housing administrator at Berkeley claimed that large lounges are the result of student "preference" for spaces large enough to hold 200 residents at a "house meeting").

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[4] Useem, Ruth Hill, "A Sociologist Views Learning in College Residence Halls," *Journal of the National Association of Women Deans and Counselors,* Vol. 29, No. 3, Spring 1966, p. 118.

[5] *Daily Californian,* March 1, 1966.

Some spaces involving large capital outlays are not used effectively because of incorrect design assumptions. The major lounges in the dorms are an example. Often well furnished and decorated, they appear mainly as a setting to impress visiting parents. The lounges are commonly referred to as "furniture showrooms," indicating high lighting levels, broad spatial expanse, impersonal settings, and an emphasis on neatness. The large lounge is an example of a space that is programmed to bring people together, but seldom meets this purpose spontaneously.

It makes little sense to design a space just for spontaneous socializing. We have found that spaces designed to bring people together are seldom effective unless there are other compelling reasons to use the space. Casual meeting usually occurs in conjunction with some other activity. The classic example is the common-use coffee pot, which draws people together.

One way costs can be lowered is by eliminating and redistributing space. The gross area per student in typical dorms is approximately 250 square feet. This figure excludes eating facilities, which add another 60 square feet. Only half of this space is traditionally allotted to the study-bedroom. Students' needs would be better served by larger private rooms. Private studio units and decentralized planning can increase the variety of private accommodation with no increase in gross square footage.

Ideal Student

A study by Burton Clark and Martin Trow[6] defines student subcultures on the American college campus. They define four respresentative groups which are found in various combinations on campuses. They refer to the four groups as "academic," "collegiate," "non-conformist," and "vocational" subcultures. This helps to explain different patterns of activity on and off campus.

The academic and non-conformist student identifies with "serious faculty members," their symbols are the library, laboratory and seminar. The collegiate student is oriented towards fun, symbolized in the fraternity and football weekends, and is "indifferent and resistant to serious demands emanating from the faculty for an involvement with ideas over and above that required to gain a diploma." The non-conformist group is deeply involved with ideas, carrying symbols of a distinctive style, in dress, speech, and attitude. Its members pursue "identity not as a by-product but as the primary and often self-conscious aim of their education." The vocational subculture, in contrast, sees college as "largely off-the-job training." Its symbol is the student placement office.

Each subculture tends to operate on different, overlapping orbits and on different life schedules. They have diverse values and perceptions. From our activity logs and interviews, we are inclined to believe that the residence hall program and design idealize the "collegiate" group at the expense of others. This helps to explain the polarization of the campus community into physically different camps: "dormies" vs. "freddies" vs. "hippies."

Dormitory conditions tend to filter out students whose presence adds diversity and a sense of intellectual dialogue to the community. The ideal schedule, then, is a misleading and potentially destructive way to organize and structure the dormitory community.

The dorm serves the needs of the collegiate and vocationally-oriented students better than the needs of the non-conformist or academically oriented student.

The typical dormitory is a poor place for intense private study. Of the four groups, the collegiate student is least affected by this condition. The vocational student can usually work at his lab or studio; he relies less on the dormitory as a study environment. The standardized corridor plan tends to encourage "pathological togetherness" as we will note later. The difficulty in finding privacy and intimate moments is more consciously annoying to the reflective and introspective than to others.

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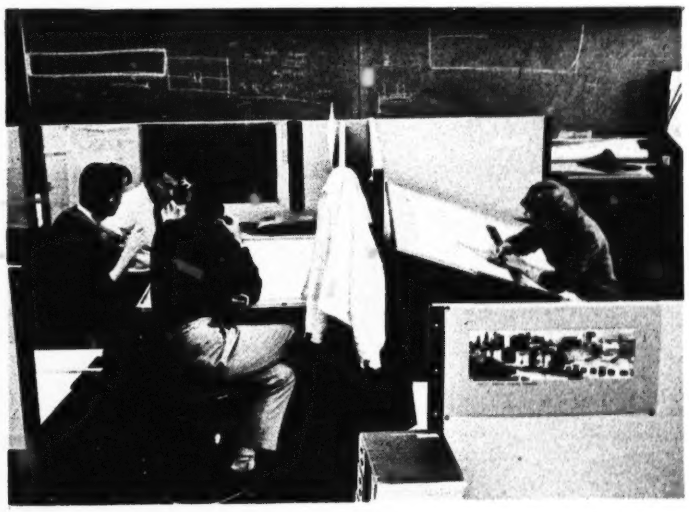
[6] Clark, Burton R., and Martin Trow, "Determinants of College Student Subcultures," mimeographed paper, Center for the Study of Higher Education, University of California, Berkeley, 1964.

An academic emphasis on individual work and independent research by undergraduates is not reflected in dorm scheduling, especially with respect to fixed eating times. Competitive standards requiring creative study and academic discipline will not come from an environment that regiments, demands conformity, and stifles individual imagination in policy and physical fact. There seem to be two reasons behind administrators' and designers' neglect of student schedules as a valid determinant of program and form. First of all, in a business venture—and the housing of students is a business venture—large numbers of people and activities must be coordinated efficiently. The administrators' only assurance of smooth operation is to insist and rely upon common scheduling.

We have suggested that the need for independence, a diversity of activities and friends are characteristics of successful student living. And yet, it is the search for these conditions that drives many students *out* of the dormitory. Assuming major campuses include representation by all groups, we have discussed, student housing should reflect a better adjustment to the balance of needs within a single facility. There are good reasons for this. First, the ideals of the academically motivated student are most consonant with the goals of higher education; housing should respond to his requirements. Second, the housing needs of the collegiate student are often well supported by fraternal groups. Third, a facility which satisfies a spectrum of needs draws on a larger market and tends to have lower vacancy rates. Finally, mass facilities which house only a very homogeneous group result in poor communication among diverse interests, destroying the integrity of the campus community.



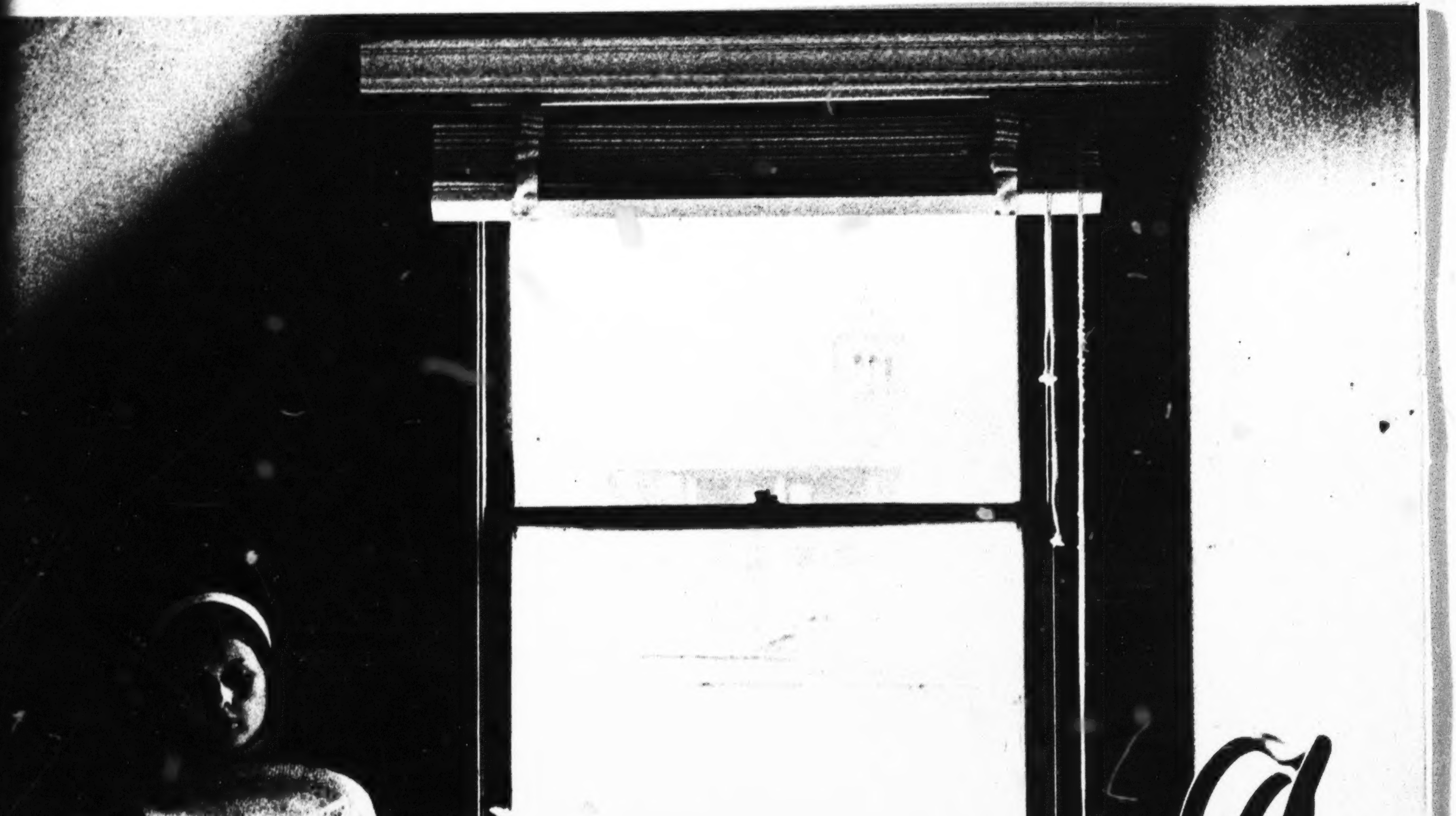
Student Subcultures:

1. academic

2. collegiate

3. vocational

4. non-conformist



The Room, A Student's Personal Environment

Our activity logs and interviews indicate that students spend one-third of their waking hours in their rooms. The total time spent in the room is greater than that spent anywhere else. The design of the individual student room and its immediate surroundings is the key planning element in college housing.

The Berkeley high-rise dorms are a good example of the most prevalent plan in student housing over the past twenty years: a multi-story building, each floor with a central corridor lined on both sides with identical two-student-to-a-room quarters. It was this plan that David Reisman and Christopher Jencks had in mind when they wrote, "At an average cost of roughly $4,000 per student, the typical student residence joins two students, two beds, two bureaus, two desks, two straight chairs, and two hundred square feet of floor in an effort to produce enlightenment."[1] Creating conditions where students can achieve privacy and solitude has yet to be achieved by most housing planners. The literature of student housing is rich with phrases such as "experience in group living," "social adjustment," etc. Such rhetoric may be a justification for the fact that typical dormitory plans do not resolve the prime student need for *individual* living. Sociologist Martin Trow, in a keynote speech to a workshop discussing life in the residence halls, stressed that one of the three functions he saw as essential for dorms was, "the opportunity to be alone, to think, to read, to work, or to just be alone."[2]

The concept of "personal space realm" or "personal territory," which has been understood by students of animal behavior for some time,[3] and studied more recently by anthropologists and social psychologists,[4] provides a clue to the nature of student irritation with the room. Whether it is expressed by the song bird who warbles in defense of her nest, or the urban gang defending its "turf," both men and animals exhibit the need for a personal territory. The student wants to establish a unique home territory that is fixed in space and which is the locus of those activities most important to him. The room is the focal point of private and semi-private activities. For students it is "home" territory.

When personal space characteristics are not available, problems result. Control over personal space is of special importance in a large, urban university like the Berkeley campus; the new student, overwhelmed by the size and impersonal nature of the campus, needs some kind of place to identify with and hang his hat in. There is some evidence that in circumstances which require the individual to adapt to drastically altered cultural settings, "home" and its amenities assume ever greater importance than when the social and physical environment is familiar.

The room is one place where an individual, at-home feeling ought to be available for the student, since most other areas in the residence hall housing must be shared with others. Lounges and date rooms serve 200 students. The recreation rooms are "about as homey as a Greyhound depot," as one student put it.[5] The bathroom, which in the family home is one haven for privacy, serves about 25 students on each floor. One girl who moved out of the dorm said of apartment life, "where else could you sit in the bathtub for hours and read the *Tropic of Cancer*?"[6]—certainly not in the dormitory.

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[1] Jencks, Christopher and David Reisman, "Patterns of Residential Education: A Case Study of Harvard," in Nevitt Sanford (ed.), *The American College* (New York: John Wiley and Sons, 1964), p. 732. Average cost in 1967 is closer to $6000 per student.

[2] Trow, Martin, "Reflections on the Residence Hall Program," unpublished speech given at Residence Hall Workshop, Berkeley, October 1961.

[3] See works by John B. Calhoun, Robert Ardrey, H. Hediger, H. Tinbergen, C. R. Carpenter, K. Lorentz.

[4] See works by Edward T. Hall, Robert Sommer, Humphrey Osmond.

Perhaps the greatest single deterrent to adequate privacy is sharing less than two hundred square feet of space with someone else for thirty-five weeks. Clashes between incompatible roommates appear commonplace, and probably affect a student's approach to his work. Over half of the students we interviewed simply told us, "I can't stand my roommate." Sleep, study, and intimacy are activities which require personal territory, while other needs may be met by degrees of common space.

Even when two roommates are compatible, there are irritations inherent in sharing private space. One girl said, "You don't have privacy in a dorm when you have a roommate"; another, "It's impossible to be by yourself in the dorms; you go to campus if you want this." No one has measured the psychic stress or the effect on student well-being or academic performance caused by the strain of living in close quarters. We have, however, documented some of the ways students adapt to the double occupancy situation. The most obvious adaptation is that one roommate is forced out of the room. Students often have incompatible schedules. Spot checks and analysis of activity log data indicate that both students seldom are studying together in the room at the same time. Thus the supposed economies of two-to-a-room occupancy planning tend to shift the burden of providing places for study, solitude, and relaxation to other facilities on campus.

The individual room is most responsive to differing schedules. A realistic look at schedule determinants would show a rich set of variations. Some university work can only be done at a particular place and time (certain libraries, for example); some work, while it is due at a special time, is left to each individual to complete as his time permits; other types of study demand peculiar conditions and special environments, while some are dependent on nothing more than a place to sit with good light; exam schedules vary from class to class, and exam preparation time will differ correspondingly. Every student has a slightly different schedule imposed on him from campus, and this schedule effectively structures much of his time. Furthermore, each student has a personal or idiosyncratic schedule. Of course the personal schedule will often respond to the campus schedule—if a student contracts for a class at 8:00 a.m., he presumably will give up his habit of sleeping in—but personal schedules should not be overlooked. With increased emphasis on individual work and independent research, college housing must be designed to tolerate eccentric schedules.

Henry Wriston, a college president for many years, sums it up this way: "If I had been able to find money enough, every dormitory I had anything to do with would have been made up of single rooms—no doubles, much less suites for three or four. Single rooms constitute no danger that undergraduates will not learn how to live with other people. Their lives are much too gregarious; even if they have one room where privacy is possible, they will still have enough group experience to avoid becoming anti-social."[7]

Along with shared living space, noise is a great enemy of privacy. Loud noises carry along the corridor and through adjacent rooms. Complaints about noise were numerous in the group interviews and in unsolicited comments written on the student logs. Rooms next to lounges, across from the elevator, laundry or bathroom suffer from lack of sufficient wall insulation and sealing around doors. Rooms at the ends of the hall are reputed to be quieter, and the residents experience fewer interruptions. Slamming doors, conversations, radios, and hi-fi's are common problems at night. One student observed that "because of the 'community living,' there seems to be a constant low-volume noise. This can be very irritating at times."

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[5] *Daily Californian*, October 20, 1961.

[6] *Daily Californian*, November 10, 1961.

[7] Wriston, Henry, *Academic Procession*, (New York: 1955), p. 192, quoted in Trow, *op. cit.*

Another source of irritation is the awareness that one might disturb others. "It would be nicer if the rooms were soundproof. For instance, when I practice ballet or play my guitar, there is always someone complaining that they are trying to study."

Girl students are particularly sensitive to the feeling in being watched while in their rooms. In a letter to the *Daily Cal*, one girl wrote, "The men from the neighborhood dorm have no need for social events and mixers for they have already met us with binoculars and telescopes."[8] It may be that there are various thresholds of visual invasion. The residence halls at Berkeley seem to fall short here, as more than once they have given rise to comments that dorm life is like "living in a crowded fish bowl."[9]

Another related source of irritation comes from wanting to protect one's possessions. There have been a number of cases of thefts of clothing and other equipment. Most often such losses are the result of leaving rooms unlocked during dinner. During one dispute about maid service, a student charged that he had found a maid looking through his belongings. It turned out that she had briefly glanced at a newspaper he had left open on his desk.[10] A trivial incident perhaps, but indicative of conditions which can destroy the feeling of security in one's personal environment.

Inflexibility of room equipment and regulations pertaining to its use are a major source of student discomfort. Two issues that are cited continually are wall surface decoration and built-in furniture. One girl who had moved from the dorm to an apartment put it quite clearly: "We've got space. . . . I can hang things up if I want to, and rearrange the furniture . . . everything!"[11]

When new students move into the dorm, they are, of course, eager to hang prints and clippings, even paint the walls. The University responds by prohibiting "tacking, taping, or otherwise marring the wall finish." It is the Housing Administrators' point of view that, while students come and go, the building remains and must be kept up at reasonable expense. As a result, decorating is confined to a small 12"x24" cork-board, placed behind the door. (However, many students ignore the rule; hence, unannounced inspections are necessary.) This is typical of student housing on many campuses. One student explained how to cope with the situation: "I put a lot of posters, etc. on my ceiling to decorate the place a little. . . . the bulletin board, the little thing it is, is located behind the door, so when the door is open—it covers the bulletin board completely! Hanging stuff from those stupid hooks at the ceiling corners is ridiculous."

Psychiatric observations[12] suggest that the rooms for women are seen as extensions of their physical persons. It becomes as important to dress the room as to dress oneself. One girl remarked during Spring 1964 that she planned to leave because,

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[8] *Daily Californian*, February 17, 1964.

[9] *Daily Californian*, February 6, 1964.

[10] *Daily Californian*, March 1, 1965.

[11] Freidlander, Neal and Alan T. Osborne, "Apartments for Women," *Comment*, University of Pennsylvania, Philadelphia, Pa., Fall 1965, p. 8.

[12] See Theodore Reik, *Of Love and Lust: On the Psychoanalysis of Romantic and Sexual Emotions*, or Jurgen Ruesch and Weldon Kees, *Non-Verbal Communication* (Berkeley: University of California Press, 1956.)

"the dorms are just too much like home, having everything done for you."[13]

Rules which prohibit room decoration, while motivated in part by the desire to maintain a clean and uniform front, are dictated by administrative decisions to avoid damage to wall finishes. While much effort has gone into promulgating rules, little seems to have gone into finding innovative solutions to the problem. Student rooms should be designed so that residents can make non-permanent changes. One approach is to line permanent wall elements with a surface that can be decorated by students and replaced periodically at a cost not exceeding routine painting and maintenance.

With regard to the inflexibility of room arrangement and equipment, the program for the dormitory design competition was quite specific:

> *Bedrooms:* Each bedroom shall have a floor area of 182 square feet net. The bedrooms shall have no built-in furniture or fixed equipment of plumbing fixtures. Items of movable furniture (the design of which is not part of this program) with their respective dimensions are as follows:
>
> 2 beds each 6'-8" × 3'-0"
> 2 wardrobe units each 2'-0" × 5'-0"
> 2 chests of drawers each 21-12" × 28" × 45" high
> 2 desks each 26½" × 41½" × 30" high
> 2 chairs
>
> "It is desired that each student have the maximum opportunity to arrange this furniture as he pleases. The owner, through experience, has found that room dimensions of 14' of exterior wall by 13' in depth have provided maximum such opportunity. These room dimensions are strongly recommended."[14]

The assumption about moveable furniture appears to be well-founded. We discovered that a great variety of furniture arrangements were created by students, although many of these arrangements fell into identical patterns. It appears that roommates rearrange furniture as often as once every ten weeks.

Two out of three of the women's arrangements were represented by one plan, in which desks faced away from each other and towards the wall and beds were placed against the wall with the head at the corner. Men's room arrangements tended to be more asymmetrical and represented a wider variation of arrangements. The fixed relationships in the room (closet, window, mirror, wall lamps and door) eliminated many arrangement possibilities. However, we conclude that in the double occupancy situation, roommates try to create their own territory; they try to escape each other's field of visions; they seek spatial isolation while sleeping.

The desire for personal territory is expressed in room arrangement in a number of ways. An analysis of room arrangement patterns shows that 94% of the sample group arranged furniture completely on one side of a hypothetical line that splits the room into two equal halves; in spite of the fact that many other arrangements are possible. The inference we draw from this is that the desire to create personal territory is stronger than the desire to share space with a roommate. Another finding concerns the desire of students to study without being observed by their roommates. In the majority of rooms, students rearrange desks so that when they are at their desks their angle of vision excludes one another from view. It is likely that when students share a room, they prefer not to be observed by one another.

In the Berkeley dorm, movable furniture *alone* does not provide the degree of flexibility or convenience that students would prefer. Our interviews and questionnaires revealed a seemingly endless list of specific complaints about features of the room design, which we will not recount

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[13] *Oakland Tribune*, February 6, 1964.

[14] Program for the competition for dormitories written by John Lyon Reid, *op cit.*

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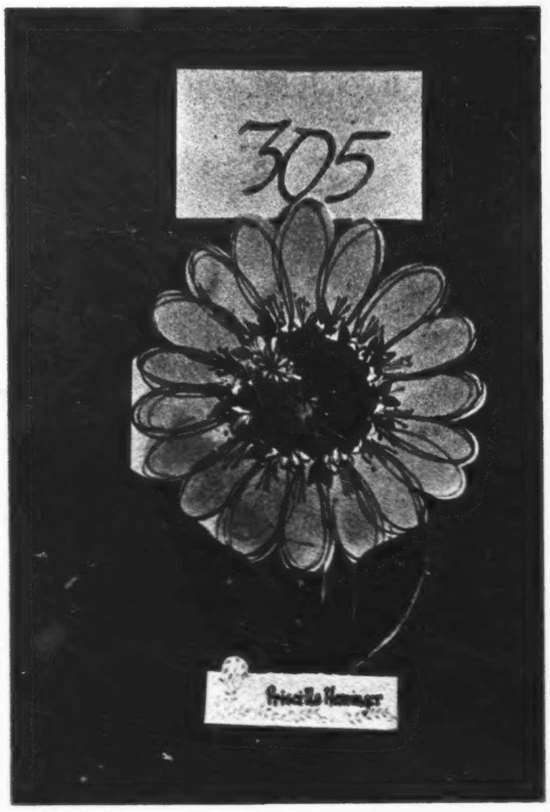

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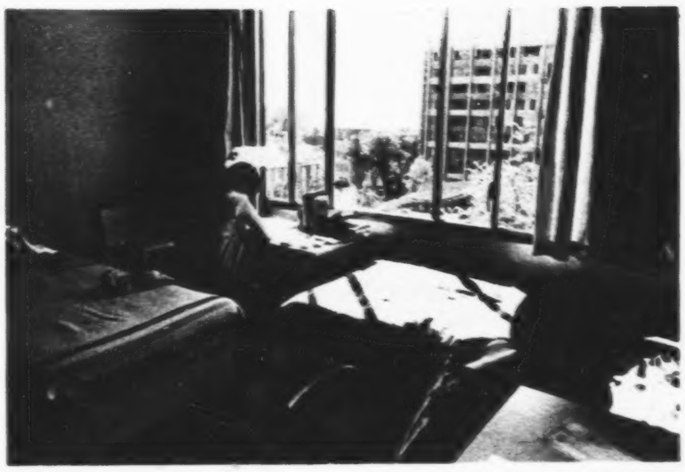

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1. A student has a need to mark space as her own: a girl's desk and pinboard, trailer housing, Santa Cruz campus.

2. Personalization starts with the door: Ridge House, USCA Cooperative dormitory Berkeley campus.

3. Typical desk placement in dorm. Note positioning to avoid each other's visual field.

here. Our hunch is that many of these complaints were generated by basic social and psychological dysfunctions of double occupancy.

Equipment that must, by its nature, be fixed should be placed conveniently; one students notes that "it would be nice if the phone were located differently, so that people coming in the door don't run into you while you're talking on the phone." Another student added, "under the present conditions it is impossible to open the door when someone is standing at the [book] shelves." Inadequate space is another source of complaints; "I need room for the phonograph, it bothers the person next door when next to the wall."

A woman student noted that "the rooms are too small for any convenient arrangement giving both occupants sufficient privacy, typing or studying late for example." Another woman student added a short, unsolicited essay on the same subject at the end of our questionnaire:

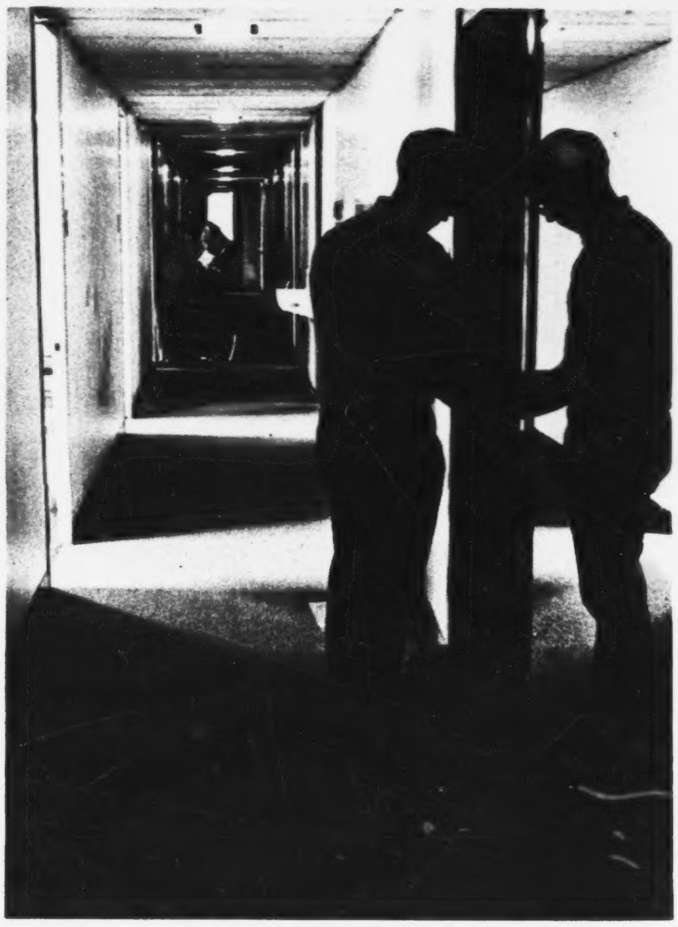
> "There simply isn't enough space in this room. My phonograph sticks out into the middle of the room, and I had to turn my dresser sideways to make room for a guitar. Also we would appreciate having curtains that could be opened without our having to stand on the beds and pull them. A light in the middle of the room instead of one small one over the back mirror would be a big improvement; so would moveable mirrors. It would also be nice if the phone was located differently, so that people coming in the door don't run into you while you're talking on the phone. The location of the light switch is also inconvenient—it makes the use of one bookshelf impossible. We also feel that a different type of window sill would be a great improvement if possible; the metal sills now make it impossible to sit on your bed and lean against the window. Therefore, we are almost forced to have just one room arrangement. . . . Other than that, the rooms are fine, other than the fact that if we wish to adjust the heat we have to either crawl under our desks or move our beds, depending on the room arrangement. Thank you for giving us the chance to air our complaints."

The trend in student housing is away from movable furniture and towards built-in furnishings. This is unfortunate because built-in systems further limit the potential for variety and the ability of students to shape their room space to meet personal needs. It is clear that just as there is no ideal student, there is no ideal fixed room arrangement; what is important is that students make a place their home by asserting their own preferences and changing it. Periodic furniture rearrangement may also be a way of letting off steam, trying to achieve variety in an otherwise monotonous environment, and expressing frustration with difficult social conditions. It may be that if the room and its surfaces lent themselves to other forms of personalization, the need to have movable furniture might not be as great.

However, many administrators have substantial reasons for holding other views. Although movable furniture may be financed through Federal College housing loan programs, some lenders follow the practice of considering only built-ins as part of the real estate package. Secondly, free standing furniture pieces are commonly of heavier construction and use more material than built-in systems (which can use walls for structural support), and thus are often more expensive. It is claimed that it is more efficient for maids to clean around the built-in equipment which is wall-hung and has no dust-collecting floors beneath it. Built-in equipment gives the room a neater appearance than free-standing furniture, and damage due to moving furniture around is minimized.

While these views are reasonable, they ignore the realities of student living as we have seen them. Many precendents for college housing administration and planning are derived from hotel management. Yet the student room is not a hotel room for a transient, it is the student's home for at least 200 days. Thus a fixed furniture arrangement which may be fine for the casual guest be-

1. Movable furniture designed by research team in use at Ridge House. Note definition of private territories in this two-man room, and bed placement over desk.



2. "Corridor culture" in the high-rise dorm.

comes an irritant to a resident over a period of time. The wish of a hotel keeper to show off a neatly arranged room to the public is reasonable, but the dorm is not a hotel. We question whether routine cleaning is not better left to residents rather than outside help. Finally, with respect to furniture, resistance to wear in relation to first cost has usually been the prime criterion. Tolerance and recovery from wear are equally important criteria. It may be appropriate in some instances to deliberately choose inexpensive furniture with a short use life. Pieces can be replaced periodically, over the life of the building, at no higher annual cost than expensive highly resistant furnishings.

Administrators, of course are not unaware of these points. Their professional journals show them to be continually interested in the products of modern materials research. Chester Winter, writing in *College and University Business,* emphasizes the importance of a personal and personally-determined student room environment. He states that "... students were genuinely concerned with regimentation.... The opportunity, though limited, to move furnishings as an expression of the student's personal living habits appeared to be very important.... Furnishings and decor deserve special attention. The details of the finishing touches largely set the tone of the room and make the difference between a homelike atmosphere and the stilted, barren character typical of much college housing."[15] Finally, the results of a survey at St. Olaf's College correspond to our Berkeley findings:

> ... after a certain point is reached, the effort to find a perfectly efficient size and arrangement for a dormitory room is not fruitful ... the rooms in Ellingson Hall in St. Olaf were planned to provide what is generally agreed to be a lucid, logical and efficient space for two students. In them there is one arrangement of furniture which exploits this potential to its fullest. In an inspection of 41 rooms two weeks after school began in September, 1962, however, only six were found to be remaining in the original efficient arrangement. In the others the furniture had been rearranged in an almost baffling variety of ways. This sort of thing could be found in any dormitory where rooms are all identical to each other. The obvious conclusion is that 'functional' efficiency is not a very important thing in the mind of the student.... One way for him to assert uniqueness is to arrange his room differently from that of his neighbors ... and he does this at the expense of efficiency, which his vitality can compensate for, and sometimes at the expense of any at all.[16]

The old Las Casitas housing on the Santa Barbara campus of the University of California is reported to have been heavily favored by students over accommodations of better physical quality. The housing officer on the campus suggests that the reason for this popularity was that students could do what they wanted to their rooms. Similar results are reported for the rather cramped trailer units used at Santa Cruz for temporary housing.

The editor of the *Daily Californian,* in an editorial on the students' apparent preference for apartments, states that "people will put up with a lot when on their own as compared to being at home or in a dorm."[17]

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[15] Winter, Chester N., "Full-Scale Model Gives Room a Trial Run," *College and University Business,* Vol. 37, No. 6, December 1964, pp. 47–49.

[16] University Facilities Research Center and Educational Facilities Laboratories, *High Rise or Low Rise? A Study of Decision Factors in Residence Hall Planning,* New York, November 1964, p. 44.

[17] *Daily Californian,* March 13, 1964.

Social Environment

Dr. Humphrey Osmond, a research psychiatrist, has suggested that designers "... need ... a 'module' deriving not from the size of a man's body but from the way in which he disposes of that body in social relationships."[1] Osmond contends that architecture can discourage or encourage social group formation, and he cites from history examples of man's willful manipulation of space to bring people together or disperse them. In recent years much lip-service has been paid to the translation of just such social concepts into college housing.

The concept is usually stated like this: The residence hall should provide the potential for isolation, and encourage independent thinking and work; at the same time it should make possible a variety of social communities based on both interests and spatial location; the students' social and intellectual lives should mesh and the building form ought to facilitate that relationship. As one housing administrator put it, "The University is not in the business of housing students. It is in the business of educating students."[2]

The most intelligent college housing proposals in the last few years have advanced the notion of "natural" social groupings as key determinants of the housing plan. The suggestion is that there are optimum group sizes for various activities, and that collections of small groups make up ever larger groups. By manipulating circulation routes, patterns of adjacency and room clusters, designers have sought to provide for the student an explicit hierarchy of social groupings or communities.

These communities always begin with the student room and usually build up to large dining commons or a central quadrangle. There is some disagreement among designers and administrators over the ideal numbers for these groups and how each group should relate. Housing administrators have been particularly concerned with establishing optimum group sizes. The obvious question—optimum group size for what purposes?—is seldom discussed.

It is senseless to talk about optimum group size unless the functions and goals of the group can be clearly spelled out. When the functions of a group are ambiguous or its dynamics poorly understood (i.e., "50 students to a mixing place ..."), it is difficult to specify an "ideal" number. If the quality of a group activity can be defined rigorously, research may be able to identify the connection between size and optimum performance. Most functions of student life have yet to be studied explicitly. At present, vague objectives in housing are justifications for an arbitrary numbers game which determines group size by the logic of managerial efficiency. The size of the dormitory complex is often determined by the number of mouths required to consume the output of an efficient central kitchen. Sub-unit size is arbitrary as far as any meaningful social function is concerned. It is related to a hierarchy of supervisory staff, including the misnamed "house mother."

At the 1954 Association of College and University Housing Officers Conference, housing administrators agreed that "groups of 25 to 50 students under one student counselor is considered ideal." They added that larger campuses should have smaller numbers while smaller campuses required larger groups. They went on to agree that 100 to 200 students were best for a house or hall, and that it would be better economically if three to five of these houses or halls could be grouped.[3]

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[1] "The Psychological Dimension of Architectural Space." *Progressive Architecture*, April 1965, p. 159.

[2] Report on the University of Rhode Island Housing Complex by the architects Sasaki-Dawson-DeMay and Associates, January 1964.

[3] Hotchkiss, C. W., "Small College Program for a Large University" *Association of College and University Housing Officers*, 1966, pp. 31–33.

On the other hand, in 1964, Chancellor McHenry explained that he had been profoundly influenced in planning the Santa Cruz campus by Newcomb's chapter in *The American College,* advocating 300 to 400 students as the optimum size of a residential group, or the number who can recognize one another.[4] In the same book, Jencks and Riesman[5] favored 250 to 300 for the same purpose. In their study for the University of Pennsylvania, the Group for Planning and Research suggested residence groups of about 30, with a dining hall for 150. Specifically, their plan called for:

1. Individual bedroom-studies;
2. Four individual rooms organized around living room suite and bathroom;
3. Access to suites through a common stair which serves eight suites on four floors;
4. About thirty students and Jr. Faculty members share one stair and entry from the courtyard plus assorted basement activities;
5. House library complements the main university library and provides browsing and study space for clusters of 30-man groups.
6. Dining hall serves 150 in cafeteria style lines and functions alternatively as hall for lectures, drama, concerts, etc.;
7. Common room for daily mixing place (committee meetings, coffee hours, etc.) seats 50;
8. Houses organized about courtyard with paved terrace used for outdoor social events.[6]

All these programs have in common the concept of natural social groupings as a form determinant. Each suggests a slightly different set of groups and ideal group sizes.

We believe that the social-groupings concept is misleading. Our research indicates several weaknesses. A rigidly planned hierarchy of social groupings encourages a static-clique-ridden social structure. This generates a self-fulfilling prophecy. In the act of predicting his social order, the planner makes it difficult for variations in that order to occur. Research needs to be directed towards evaluating concepts of spatial ecology and their validity in light of real student interests and activities. Does the social groupings concept create "comprehensible communities," or does it tend to inhibit the evolution of groups based on common interests and intimacy rather than physical space alone? By using the social concept as the key determinant for organizing the problem, the programmer oversimplifies at the expense of other issues uncovered in our study.

Each student belongs to many groups, each functioning differently, and changing in structure, numbers, and style. The formation of such groups may be facilitated by design through proximity, and sharing circulation and other spaces. But design should allow residents options as to which groups they would like to belong. The activities that generate groups tend to overlap and usually are not connected with a single space. Space for people to get together in must be integrated with reasons for people being there. Casual or routine activities are better social integrators than formal lounges which, according to our observations, people seldom use. Doing laundry, having coffee, participating in work parties provide the kind of informal occasions in which people can get to know one another.

Our findings in the Berkeley dorms give substance to the weaknesses in social-groupings concepts. First of all, the Berkeley dormitories do not provide the social order they convey at first glance. The buildings were planned to work something like this: thirteen two-man rooms on both sides of a long, narrow corridor form one floor; one

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[4] McHenry, Dean E., "Small College Program for a Large University," *College and University Business,* July 1964, pp. 31–33.

[5] Jencks and Riesman, *op. cit.,* pp. 731–773.

[6] Group for Planning and Research Inc., *Undergraduate Men's Housing/The University of Pennsylvania,* Philadelphia, April 15, 1961.

"Like a furniture showroom": the living room in the high-rise dorm.

large bathroom serves each floor; these floors are stacked eight high to form one residence hall; small lounges are found on every other floor; a a large lounge, library, and reception area make up the ground floor; four residence halls are grouped around one dining commons-recreation space to form one unit; the unit is coed; 2 residence halls house male students and 2, female students; this is approximately 800 students per dining commons.

From observations and interviews, we learned that each floor becomes a cohesive social group from which it is difficult to break out. Students on a floor tend to stick together even in the large commons and dining room. A majority of the students interviewed found this "sticking together" oppressive at times. One girl said, "I get along with the girls on my floor, but they all think I'm a snob because I don't do *everything* with them."

The main lounge and library do little to develop overlapping social groups among the residents; they are used most of the time by loners and occasional couples looking for a private spot. Largeness and formality of furniture arrangements are the most commonly cited lounge characteristics discouraging casual small group use. High viewing distances, light levels, high ceilings and visual access from the hall entrance, make the lounge awkward as a dating parlor, and impossible as a group study space. In 1963 the students claimed that there was "no opportunity for an intellectual relationship between men and women who live in the dormitories." They proposed a 6 to midnight "open house" once a week for study dates. The administration found the proposal unacceptable. Dean Katherine Towle, in an interview by the *Daily Cal,* "said she believed it 'inappropriate for men and women to be in each other's bedrooms.' " She went on to say, "the physical setup in the dorms was not suitable for the study dates . . . students can meet in the dormitories, but not in their rooms."[7]

The large dining and recreation commons fail to provide an effective and congenial place for coed social and intellectual meeting, since the students generally use the space in their small floor cliques; the physical form provides little leverage for social interaction (men and women are provided with separate entrances!). Although men and women are not physically separated in the cafeteria, "they might as well be," said one girl. She went on to describe "no man's land in the middle of the dining hall, which very few people have the nerve to cross."

Outdoor space, although attractively landscaped and heavily trafficked, gets little use as a place to socialize. It is not used for sunning, primarily because of the nine floors of unseen eyes above; people sunning below are often playfully bombarded by missiles from above. To return to room location, our hallway observations bear out the expected relationships between location and friendship circles. Functional distance (i.e., nearness + opportunity for contact) was found to be a reliable index for the frequency with which spontaneous meetings occurred in the bathroom and corridor.

The best example is the corridor: common use of the corridor and proximity of room location make casual meetings inevitable. The floor divisions represents a "nod line" beyond which residents do not feel obligated to exchange greetings. This relationship between room location, friendship circles, and unplanned interaction has been well verified by other researchers.[8]

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[7] *Daily Californian,* December 12, 1963.

[8] A. F. C. Wallace, *Housing and Social Structure;* also Festinger, Schachter, and Back, *Social Pressures in Informal Groups,* Harper and Bros., New York, 1950.

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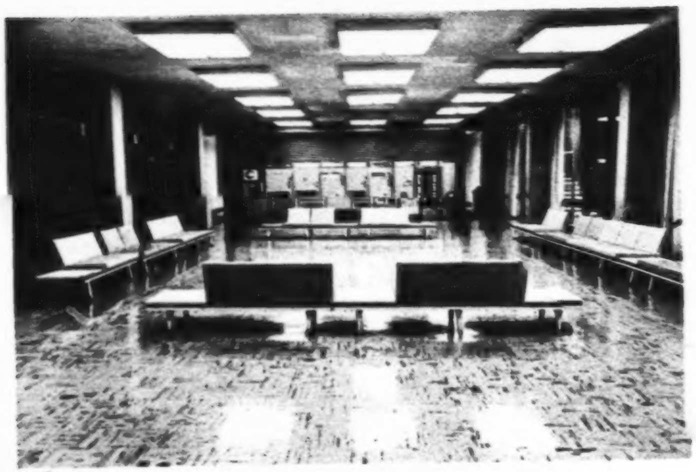

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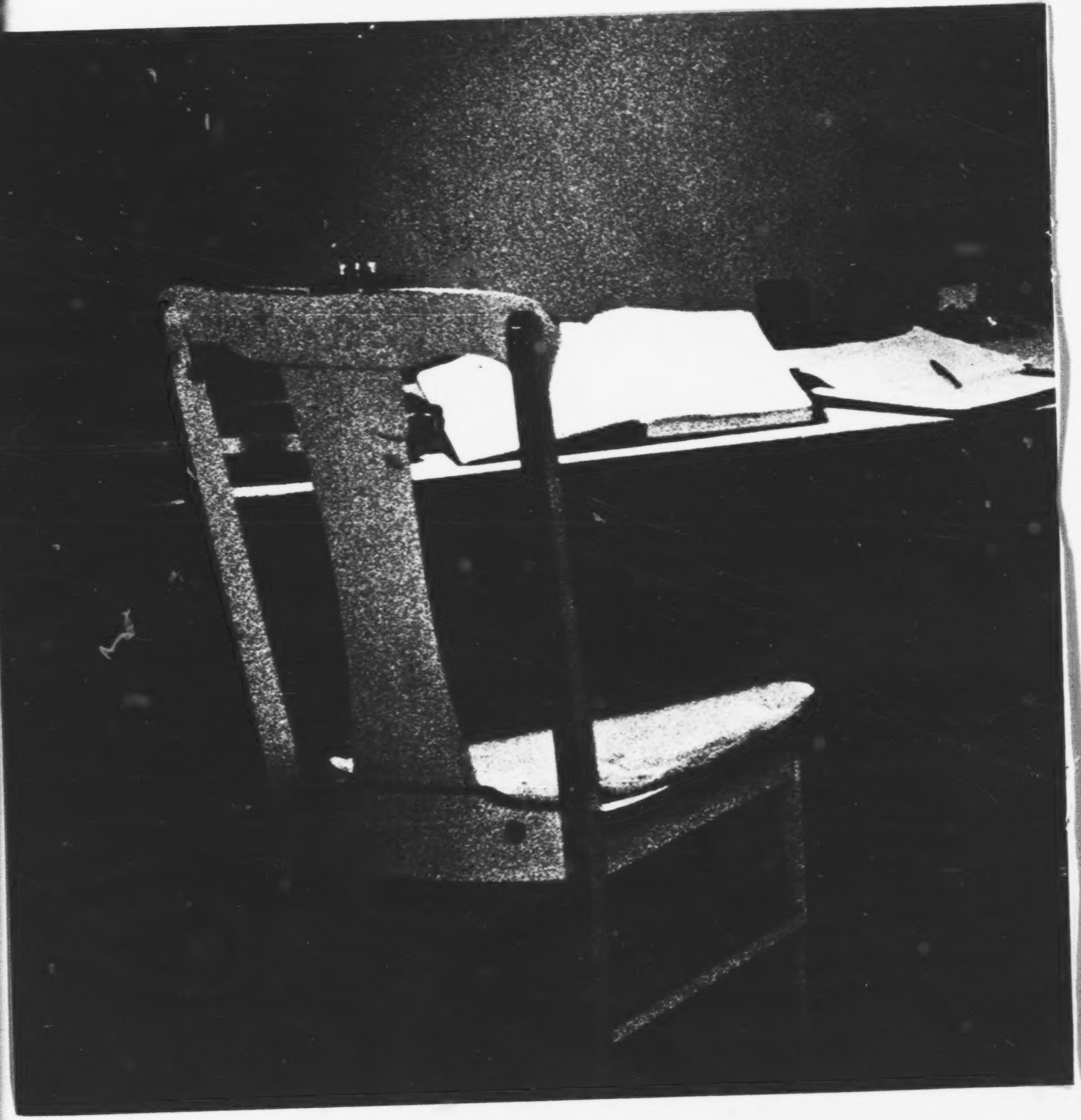
1. The main lounge in Ridge House accommodates a variety of social uses. Note the relation to entry, bulletin board, low lighting levels and lived-in furnishings.

2. Lounge in the high-rise dorm.

3. Recreation room in the high-rise dorm.



The Study Environment

Next to shelter and community, a suitable study environment is the most important qualitative criterion for college housing. The importance of study conditions to students is confirmed by several groups who have investigated housing at Berkeley. A study conducted for the Regents in 1964 obtained questionnaire responses from 2,000 students living in various Berkeley accommodations.[1] In response to a question asking the two or three factors most important to overall housing satisfaction, "quiet for study" was the most frequently listed item.[2]

A Citizens Advisory Committee on Student Housing appointed by the Berkeley City Council reported that, "From the point of view of the student, the preferences frequently named as to accommodations included quiet study conditions, reasonable cost, comfort, privacy, freedom to come and go, congeniality of social grouping, quality of accommodations, nearness to campus, and good eating arrangements."[3]

At Berkeley, as at many other schools, studying occupies more student time than any other single activity. This was indicated by our activity logs, and is substantiated by at least one other in-depth analysis of study: A sample of 400 students at four eastern colleges showed that students spent about six hours a day studying.[4] It is important for students to spend these hours under conditions which give the largest returns on their investment of time and energy. Our assumption is that the quality of intellectual effort is partially related to the environment in which the work is done.

Some research has indicated the influence of environmental factors such as noise and lighting on task performance,[5] but no systematic attempts have been made to correlate "natural" and total environmental conditions with academic performance. Beyond thresholds of noise and poor light, these relations may be quite subtle. A study at the University of Iowa[6] grouped all first semester freshmen by housing accommodations—fraternities, dormitories, living at home, or living "off" campus—and found no appreciable differences in academic achievement records.

According to the Regents' Housing Report, among dissatisfied students who moved out of the Berkeley dormitories, sixty-seven per cent gave "desire for better study conditions" as their reason.[7] Among the twenty-seven per cent of students now living in the residence halls who are dissatisfied with their accommodations, "privacy" and "quiet for study" ranked first and second as reasons for their dissatisfaction. While "quiet for study" ranked highest as a determinant of housing satisfaction, a majority of dorm residents found existing study conditions unsatisfactory. Forty-three per cent rated existing conditions for study as "fair"; another twenty-seven per cent of the respondents rated them as "poor." Apparently then, the desire of administration and students that the dormitory be more than a place to eat and sleep is frustrated as far as study conditions are concerned.

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[1] Real Estate Research Corporation, *op. cit.*

[2] Committee on Off-Campus Housing, *op. cit.*, p. 4. Recently a student Committee on Off Campus Housing questioned 3,000 students living off campus and found that "a frequent comment was that many buildings were noisy and hard to study in. It seemed that buildings were noisy even though the inhabitants were fairly quiet . . . the Committee feels it represents a significant discontent of students with their accommodations."

[3] Citizens' Advisory Committee for Student Housing, *op. cit.*, p. 9.

[4] Committee for New College, *Student Reactions to Study Facilities,* Amherst, Mass., 1960, p. 7.

[5] See *Environmental Abstracts,* School Environments Research, Architectural Research Laboratory, University of Michigan 1965.

[6] Prusok, Ralph E. and W. Bruce Walsh, "College Students Residence and Academic Achievement," *Journal of College and Student Personnel,* Vol. 5, No. 3, March 1964, pp. 180–184.

[7] Real Estate Research Corp., *op. cit.*

Certain kinds of studying are group affairs, but the main need is the opportunity to work alone in a personal space. This has been confirmed by other researchers. The Committee for a New College, sampling study habits and preferences at Amherst, Smith, Mount Holyoke and the University of Massachusetts, found that eighty-five per cent of the four hundred students sampled preferred to study alone.[8] Eighty per cent expressed a preference for small study spaces, and most wanted to study in a place where nothing but study was going on. Research by the Stanford School Planning Laboratory obtained much the same results.[9] Analyzing study preferences of 700 students in six community colleges, they noted, "The sharp difference between studying alone and studying with even two or three other students is probably meaningful." Forty per cent of the sample found studying alone "Extremely desirable," while only eight per cent felt the same about studying with two or three others.

Our discussion of the room environment has touched on some of the reasons why the typical dorm fails as a good place to study. The double-occupancy room lacking privacy and subject to noise and interruptions and conflicts in roommate schedule habits, is not conducive to study. Moreover, the room is inadequately equipped for good studying. We have also noted the kinds of adaptations students make to achieve privacy for study. Particularly significant is the fact that students arrange their desks and beds to get out of their roommates' visual field while he is studying, thus "guarding" their own study involvement.

Personal privacy, outside noise, and interruptions are, of course, related. We have discussed how the "corridor culture" destroys privacy. Any isolated change in soundproofing materials or the like will not change this condition. Some university subcultures have devised ways of coping with problems of study in institutional settings. Take for example the tradition in English universities of "sporting the oak." Each room is entered by two consecutive doors. When the outer door is closed, this is a signal that the occupant does not want to be disturbed and the message is usually respected. Generally, American dormitories have not been as successful in devising social and physical means of protecting privacy. As one student noted in frustration on his activity log, "It is impossible to record interruptions. Life is mostly interruptions."

When it comes to equipping a room for study, administrators and designers seem to have forgotten their own college days. Writing papers, reading from various source materials require plenty of horizontal surface and storage. Our questionnaire found that almost half of the residents found their desk top (24" x 40") too small for their work. Sixty-eight per cent were forced to move books, radios, lamps, clocks, etc., off their desks when they wanted to study. The one desk drawer (12" x 15" x 8") provides inadequate storage. A typical comment by one student was, "My desk is certainly too small to do any comprehensive assignments consisting of several pages and using two or three books." Surprisingly, we found the bed used extensively as a study place. Forty per cent of the questionnaire respondents said they used the bed rather than the desk for reading and writing. Others found the floor best suited to their study purposes.

These findings suggest that just as hospital beds have developed along specialized lines, student beds might be designed with study in mind, including an adjustable head rest, writing sur-

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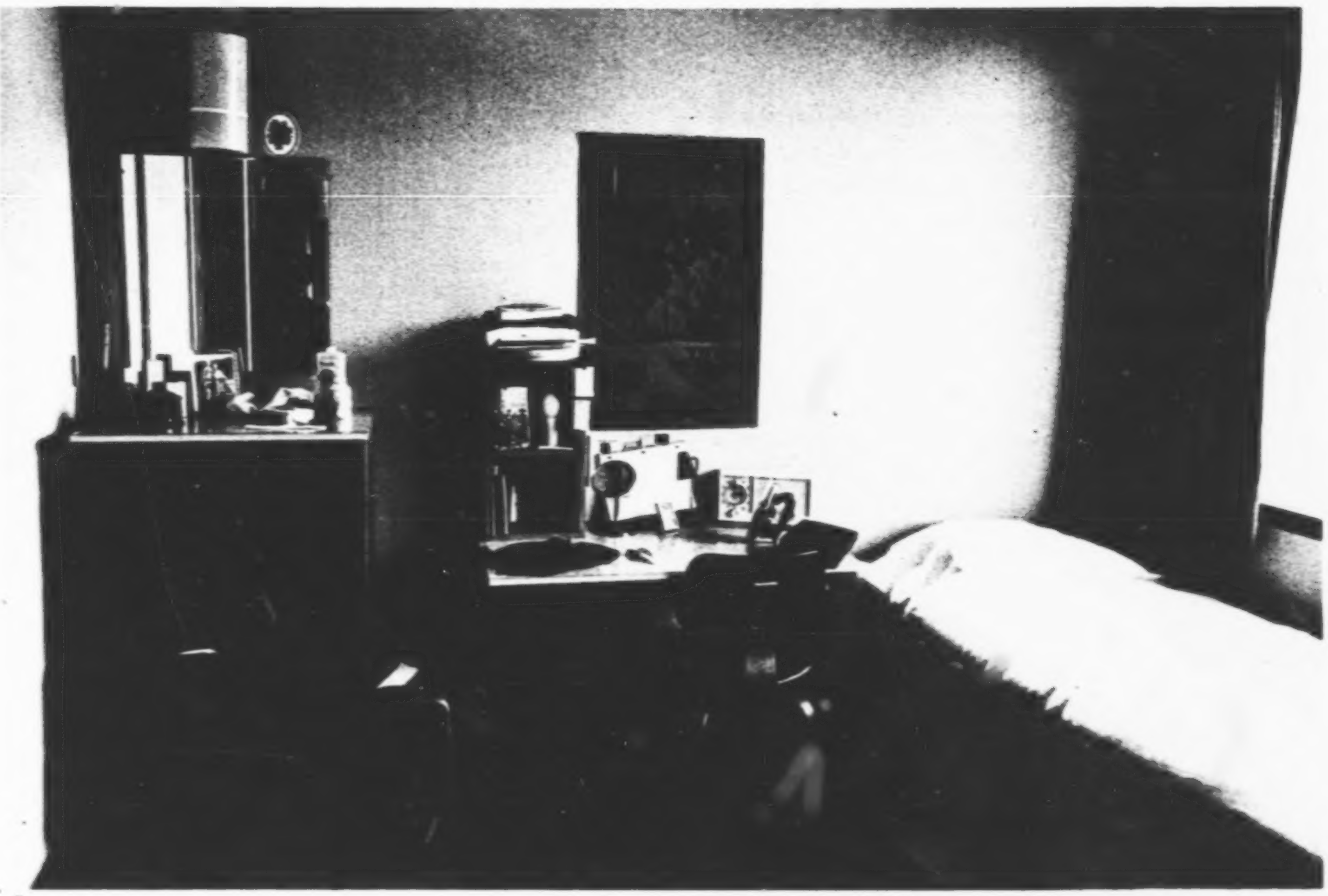
[8] Committee for New College, *op. cit.*, p. 27.

[9] Community College Planning Center, *A Study on Studying*, Stanford School Planning Laboratory, School of Education, Stanford University, Stanford, California, 1965.



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1. Study equipment in the high-rise dorm room. The desk is often used as a storage surface, not for study.

2. Furniture system in Ridge House designed by research team. It cost half as much as standard institutional furniture and was assembled by students. The user is able to create a usable desk surface and room to spread out by joining movable components.

face, storage and lighting. The distaste we found for bunk beds may reflect the fact that bunks are not good study places.

Another condition for private study is immediate control over heat, light, and ventilation conditions. Students often remark that they couldn't study long where such variables were out of their control. The Committee for New College confirmed this attitude. They reported

> Frequent complaints about study spaces center around problems of heating, lighting, and ventilation. In his own room, a student can approximate his own standards of comfort in such things more than is possible where all controls are out of his hand . . . students report greater personal comfort in their rooms in other respects—posture, clothing, and occasional periods of relaxation."[10]

A Berkeley student said: "I would rather study in my room than anywhere else—such as dorm library, or the crowded campus library— because here I am master of the heat . . ."

So far we have discussed study as an intense individual activity, occurring in "personal" space and characterized by the students' attempt to limit levels of distraction. The conditions necessary for this kind of study have been stressed because they are those most lacking in dormitories. There are, of course, other kinds of study behavior important to intellectual and social development. Each implies different study environments. Even under conditions that seem ideal, students feel the need to change study environments and locations from time to time. The comments of one coed are typical: "I get tired of studying in my room all the time. When the walls start closing in on me—especially at exam time—I go study somewhere else." Different kinds of academic assignments often require different kinds of study involvement. Investigation revealed four types of study behavior in addition to the intense individual variety. These can be characterized as follows:

A. *Casual study:* The student seeks relative isolation during study time, but stays in touch with some other social situation during frequent breaks.

B. *Waiting-for-something-to-happen-study:* This usually occurs in a group setting where some social exchange is considered permissible; it is often associated with a lounge, library reading room, or even coffee shop.

C. *Small group study—"semming":* Characterized by a seminar size group of three to seven students; they try to isolate themselves from others while swapping class information;

D. *Intense study out of the room:* Cramming or library assignments requiring use of extensive references.

Each study type corresponds to degrees of privacy and participation. Preferences between types varies according to a student's personality, work habits, major, and available facilities. The examination of these study types leads us to believe that the programmatic notion of an ideal study space is as unreliable as the concept of an ideal or average student. The descriptions of activities with which most administrators and architects are supplied are often so gross and stereotyped that they do not provide an adequate basis for design decision.

The student housing environment cannot be expected to supply study areas for all the different kinds of study we have outlined. Each student tends to develop his own inventory of favorite places: the library, a carrel in the stacks, a quiet corner of the coffee shop, a vacant classroom, a shady place on the grass.

Decisions about how student housing will accommodate the kinds of study that we have discussed can best be made after a realistic appraisal

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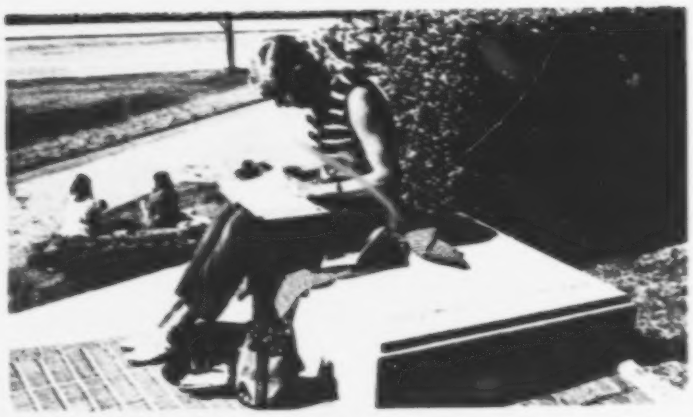
[10] Committee for New College, *op. cit.*



1. "intense study"

2. "waiting-for-something-to-happen study"

3. "semming"

4. "casual study"

of study locations available on campus has been made. One measure is gross square feet per student on campus, along with characteristics of the spaces. The amount of gross space per student will vary. For example, we would expect to find considerably more space available to graduate students than to undergraduates. There is likely to be more space available to students in the sciences than in the humanities; as a consequence science majors may have an easier time finding alternate study spots.

This points up the need to design for study on a campus-wide basis, with the dormitory being the home base where individual and small group study conditions are available. The Committee for a New College found that: "Since the total amount of studying per student was found to be almost constant regardless of the number of roommates, the amount of supplementary study space needs to be increased as the number of roommates expand above one."

The practice of planning and financing student housing as a closed system in isolation from campus or community facilities is uneconomical. Single purpose facilities may appear economical in terms of cost per student, but may be expensive when judged as parts of total environments for student living.

During the 1964 Berkeley demonstrations, we suggested that one way for a large campus to cope with alienation and depersonalization would be to provide each student with a small private space (about 30 square feet). The spaces could be clustered about the campus and students would be free to use them as they pleased. Our suggestion was not taken seriously at the time, yet the need seems to be real. On several commuter campuses, entrepreneurs are proposing commuter centers which will offer each student a study station and parking place at a monthly rate.

The significance of the gross-square-feet-per-student measure is such that on campuses where there are not alternative study places the failure of the housing environment to provide proper study space may have serious consequences. Events at the University's San Diego campus in February 1966 are worth noting.[11] On this campus there appear to be very few places which were designed for group study and students were in the habit of using their rooms for that purpose. Each suite consisted of five double occupancy rooms grouped on a common "visiting area," which was used for activities such as card games and music listening. Students studying together stayed in the double rooms, doors closed, in an attempt to gain a semblance of privacy. A change in the rules restricting coed visiting hours and placing the rooms off limits for coed studying resulted in a student revolt described as a "major campus crisis." This seems to be a clear case where failure to design for reasonable student needs on a campus-wide basis led to social and physical problems. By contrast, we give the example of Goldie dormitories at Princeton, studied by one of the authors. The residents interviewed stated they did not do much intense studying in the dorm and looked at it as a place to be with friends. However, they did not feel that the dorm study environment, as poor as it was, was an issue; they were well satisfied by extensive back-up study facilities available on campus nearby.

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[11] *The Revelle Times*, Vol. 1, No. 1 UC San Diego; *Los Angeles Times*, February 24, 1966.

Meals and Snacks

Early in 1966, Dr. R. E. Peterson published his report, "The Scope of Organized Student Protest in 1964–65." In preparing it, he received data from over 800 four-year colleges and universities. The report was well-publicized. An astonished reviewer wrote, "The fact is that campus food—or rather poor campus food—ranked second only to civil rights as the trigger to students' protests during the 1964–65 college year!"[1] The *San Francisco Chronicle* headlined, "Big Campus Gripe—Food," and the *Daily Californian* reported that some girls think they are served too many potatoes. Other girls interviewed said, "I just got sick of seeing 'mystery meat' every night," or "about the fourth time I found hair in my food, I gave up and started eating sandwiches in my room." Our initial interviews confirm such complaints, stressing poor quality and lack of diversity in menu. We believe that complaints about food, however justified, are a catchall for related irritations, not as easy to articulate. Interviews and observation turned up less dramatic problems as consequences of institutionalized feeding patterns.

A single type of food service, aimed at economic and functional efficiency, has evolved in dormitory planning. Berkeley dormitories employ such a mass feeding program. Food service is written into the dormitory contract with students paying in advance for three meals a day, served at fixed times in the dining hall.

Next to food itself, complaints about conflicts between student schedules and fixed meal times are the most pervasive. They are also, perhaps, the easiest for an intelligent administration to remedy. On a large campus such as Berkeley, students have a variety of academic work and social commitments, which often force them to miss meals already paid for. Some students work best late at night, sleep late, and miss the fixed breakfast hour. The rationale for paid-in-advance meals is lost on students who consistently miss mealtime; the economy of mass feeding is lost to the student who pays for food he doesn't eat. Within the context of mass feeding, there are a number of ways of dealing with this problem. Our premise is that students should be charged only for meals they actually consume and meal hours should be extended to those of a normal commercial cafeteria.

An experienced private housing operator in Berkeley provides one hot meal per day and lets students fix their own food the rest of the time. Private housing on other campuses offer bag lunches to students unable to come home for lunch. Food services in some dorms provide fix-it-yourself snacks of non-perishable foods. The cooperative dormitories have adopted this practice, making sandwiches and snacks available 24 hours a day.

A place to make snacks and occasional meals is not only convenient but socially and personally satisfying. Students sometimes use eating as a break from studying, and want to make anything associated with it as filling and fulfilling as possible. Some like to cook special dishes, cookies, fudge, etc., in a display of culinary skill. Popcorn and other treats become the focus of breaks and informal talk for students sharing apartments. Our interview sessions show this to be an important event for men as well as women.

There are differing opinions on the extent to which students want to do their own cooking and housekeeping. Some enjoy these activities and develop them into creative outlets. The president of Barnard College, in an article in the *New York Times* cited "the desire of many Barnard students to do their own cooking and housekeeping as a practical example of their desire to escape the

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[1] Ferrer, Terry, "Big Campus Gripe—Food," *San Francisco Sunday Examiner and Chronicle*, April 10, 1966.

Establishment."[2] On the other hand, many students know and care very little about cooking, and others see it as too demanding on their time. Undoubtedly there is a factor of self-selection determining who buys into situations where meals and services are provided, but there could be more student choice and variability on these matters built into residence halls. The third conflict points up the importance of a variety of dining environments. For students in a hurry, the long lines are a nuisance; for students anticipating a leisurely meal hour, the "hurry-up" atmosphere is discouraging; it is even awkward for a student to eat quietly by himself. Large, noisy, glossy dining rooms emphasizing maintenance and efficiency reinforce these feelings.

The dining situation, then, compromises the positive functions associated with group dining. Intellectual or intimate conversations are best encouraged by quiet, secluded areas, where there is an atmosphere of "take-as-long-as-you-want." Such conversations play a vital part in student's lives, but all too often facilities serving large numbers of people let maintenance and efficiency have priority over such intangibles.

Administrators have their own view of what amenities can be brought to the mass feeding situation. Family served meals, meal-time, and dress regulations have been continual sources of conflict. Served meals take twice as long as cafeteria style service. When 900 students are seated at one time, the dining hall is overcrowded and hardly resembles one happy family around the dinner table. Latecomers are locked out. Because of student protest, the number of served meals has been cut back since the opening of the dorms. In spring 1966, students requested through their dormitory government that service be changed to buffet style five nights a week.

Compulsory dress rules have also met with student discontent. During fall 1965, women students compaigned consistently to change dress regulations. They complained they could never feel "at home" with such "petty" rules. A girl studying in slacks, for example, would have to change before coming to dinner. In spring 1966, dress regulations were relaxed.

A last consideration concerns the flexible use of dining facilities and their economy as an investment. If students are to be fed at the same time, food preparation and dining requires twenty to thirty square feet per person, assuming half of all the residents are seated at one time. Yet large dining halls are in use very few hours of the day. They have no other programmed use except as a poorly attended "study hall" in the evenings, or for an occasional dance. The large dining space is achieved at the expense of personal space in student rooms.

We have discovered five distinct eating patterns. Traditional dining hall designs meet none of them adequately. Each has implications for different physical elements in the program:

(1) *Gorge and go.* The student is in a hurry and needs a quick meal; he does not want to be detained by meeting friends, waiting in lines, and changing clothes.

(2) *Casual dining—making new friends:* Meals and snacks have particular social importance; students try to use this time to meet new people and to exchange ideas and community information. Table shapes and types of food dispensing are apparent variables here. Robert Sommer's work indicates that long tables are conducive to meeting new people, while circular tables are best for groups already formed.[3] The self-service situation encourages people to initiate conversation with strangers while they are commonly engaged in some routine task.

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[2] *New York Times,* November 18, 1964.

[3] Robert Sommer, remarks in conversation, summer 1965.

Dining commons in the high-rise dorm.

(3) *Intimate conversation with friends:* Students have indicated the need for occasional quiet, leisurely meals and conversation with girl friend or old buddy.

(4) *Solitary meals while reading:* This situation requires a relatively quiet, unhurried atmosphere, and adequate reading light. The coffee bar/news rack combination is often patronized by students for this reason.

(5) *Snacking:* Students like to get or prepare a bite to eat at any time of the day or night, without necessarily being dressed for the public, like the midnight snack at home. Innovations in vending machine service may change traditional snacking habits.

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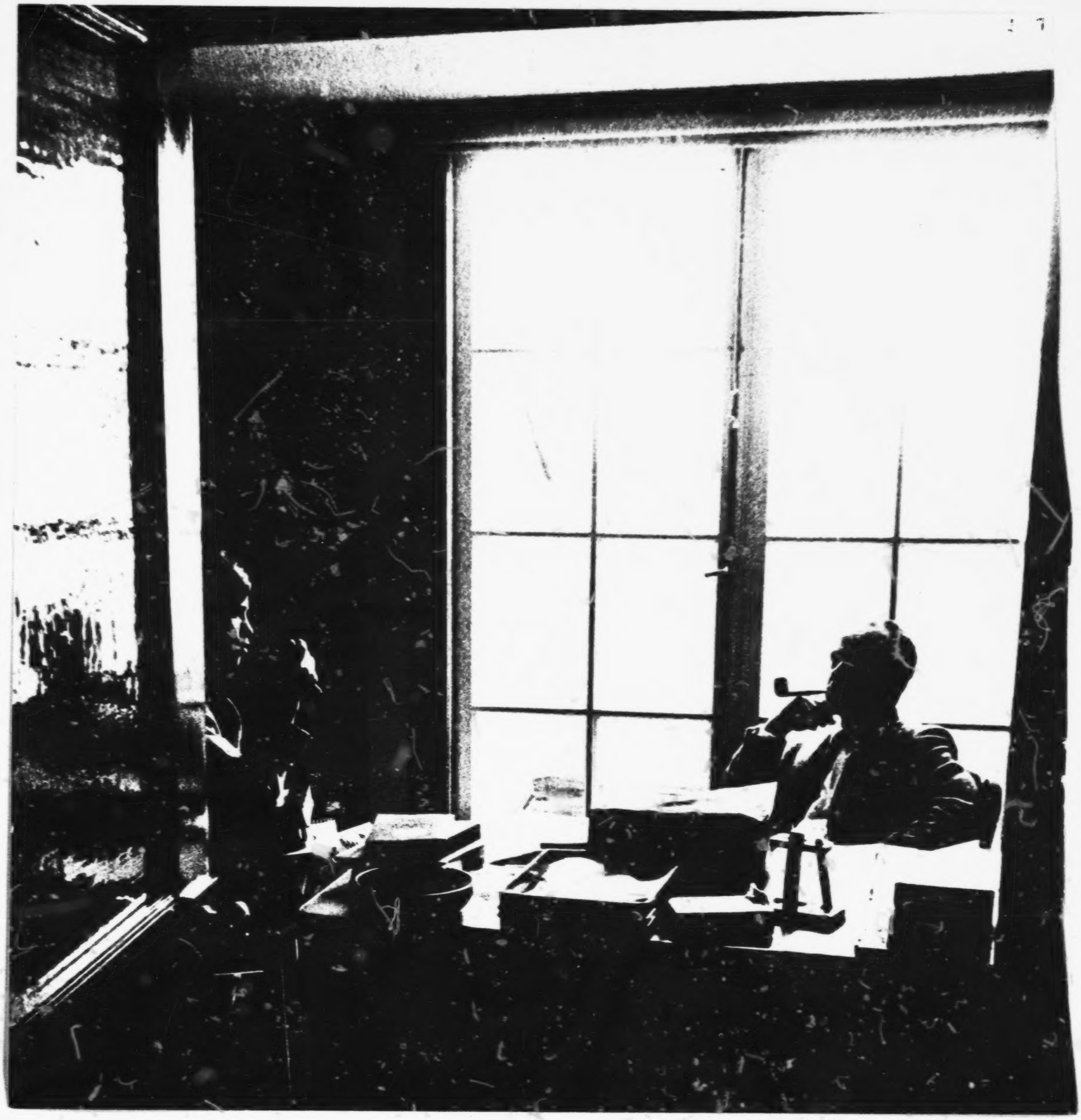
1. "snacking"

2. "solitary meal while reading"

3. "mass feeding"

4. "gorge-and-go"

2



The Intellectual Environment

A summation report of the four day "National Conference on Student Stress," held last year in Warrenton, Virginia, concluded that in addition to an education relevant to the modern world, "more authentic and personalized relationships between students and faculty" were needed. It suggested that the campus community move towards the image of "a group of collaborators" as opposed to a "nest of adversaries."[1]

Of all issues facing housing administrators in the last decade, the notion that housing can play a part in the overlapping of academic and non-academic lives has caused more comment, generated more articles, and produced fewer physical results. Among housing planners the issue has become cliche.

One university-based psychiatrist commented recently that "a student can spend months on a large campus without having conversation with a person over thirty.[2]

In an attempt to overcome the size, impersonality and lack of close faculty-student discourse at the multi-university, Berkeley, along with other universities, has adopted several devices to promote the concept of living-learning environments. Some of these attempts are modeled after the English concept of the residential college, others on the residential system of some Eastern men's colleges where faculty members live in the housing complex. Others have experimented with providing faculty offices and "seminar rooms" in the residence hall. Often faculty members are encouraged to eat an occasional meal in the residence hall. According to one student, rather than making the meal a casual extension of academia, their presence makes eating a more formal occasion.

Stephens College and Michigan State University have been holding class meetings in the residence halls for some years. Other major universities, including The University of Michigan and The University of California, are planning or operating residential colleges on their respective campuses.

In February, 1966, the *Wall Street Journal* surveyed institutions trying to cope with this problem. The report, headlined "Some Universities Seek Small-College Flavor Amid Expansion Moves,"[3] explained the Michigan State program:

> To inject more of a small-college atmosphere into this environment, MSU has launched a 'living-learning residence hall' program here. Under the program, which has been under way for five years, 42 classrooms, 22 laboratories, seven lecture halls, 11 conference rooms, 223 faculty offices and four libraries have been built in what is basically student living space.

MSU provost, Howard Neville assesses the program a success, telling of students and faculty who ". . . have coffee and lunch together and students aren't reluctant to join a professor at his table to question him about a class subject or anything else."

> The University of Michigan in Ann Arbor doesn't hold classes in its dorms, but it has assigned freshmen who live together to the same classrooms. Michigan officials say their experience indicates students' grades improve when classmates live in the same dorms. The classmates often discuss academic topics in evening bull sessions and, because they feel more at ease among friends, they ask questions and join discussions in class more often, officials say.[4]

It is too early to evaluate the effectiveness of most of the living and learning programs. The idea of creating close communities of teachers and students by building academic and housing environments where they can work together in small groups is a promising one. It is most promising when initiated by students themselves. The 1967 summer residential program at Berkeley, conceived by members of the University Students Cooperative Association, and to be held in its facilities, is one such example.

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[1] *New York Times,* Tuesday, June 14, 1966.

[2] *Time* 19 May 1967, p. 101.

[3] *Wall Street Journal,* February 1, 1966.

[4] *Ibid.*

We expect there will be continuing exploration of residential living-learning concepts. However, plans should take into account the realities of the modern campus. At the large university one problem is that of faculty loyalties, interests and time. It is inevitable that the professor's loyalties, particularly in his developing years, lies predominantly with his discipline and his department. It may be difficult to find prolonged interest by faculty in undergraduate teaching away from their "home base." Where student residence is viewed largely as a student territory, academic functions on the residence hall are unlikely to be taken seriously by faculty.

For his part, the modern student is far more mobile than the resident of the original English residential college. The automobile has expanded the student's orbit and his conception of the campus community. The physical problem is creating a network of scattered informal settings where faculty and students can meet on neutral ground.

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1, 2. Institutional buildings defeat informal student faculty contact.

3, 4. provide places where students and faculty can get together informally.

In Loco Parentis

In loco parentis policy is a traditional and persistent reason for constructing dormitories. The University of California policy originally followed the German tradition, in assuming no responsibility for students outside their academic life. However, the University's rapid growth and the lack of housing near many campuses forced its entrance into the housing field. The University has donned the parental mantle somewhat reluctantly. This is expressed in the following statement of the 1964 Ad Hoc Committee on Residence Hall Operations:

"The sole purpose of residence halls is to serve the students who live in them in the best possible way. To meet student needs the University must first provide diversity in residential housing, simplicity in design, low room and board costs, a minimum number of rules, and cultural and social programs related to the academic purposes of both the student and his university."[1]

In spite of the advanced and experimental attitudes of many administrators, the University has been plagued with *in loco parentis* difficulties. Berkeley, an urbane campus with a relatively long experience in student housing, has evolved a most elaborate *in loco parentis* structure. The new dorm resident finds upon looking at his information book, after an initial salutary paragraph, that:

"To insure that your residence hall living will be both pleasant and conducive to the effective use of your nonclassroom hours, a number of rules have been established . . ."[2] Reading on, one finds a storehouse of neatly indexed rules, covering such problems as goldfish and guppies (*allowed*), candles (*not allowed*), decoration (*see specific instructions*), wastebaskets (*may not be perforated*), laundry (*may not be dried in room*). The italics are ours.

The irony of the present situation on many campuses is that traditional *in loco parentis* rules tend to force the institution, parents, and students into roles that none of them willingly accept.

When young people first go off to college their parents look to the physical accommodations for an image of respectability, order, and wholesomeness. Rules may be secondary. For its part, the university wants to avoid "trouble." Rules, when they don't prevent trouble, at least justify the university's position in the eyes of parents and the community: they tried, but students will be students! The students simply want to be treated as adults.

In loco parentis pervades the social and physical environment of the dorms and colors the other issues we have discussed. For this reason we intend to discuss it not in terms of our specific data, but rather in a more general sense, since any conceptual change in the nature of student housing will require changes in current thinking about the points raised above.

Ironically, the University controls students more impersonally and arbitrarily than do most parents. This restrictiveness is due partly to the attitude expressed by one dean, "Everyone hates to see changes made";[3] but it is also due to the fact that the University, dealing with large numbers of people, has found that the best way to operate efficiently is to make rules across the board. Parents complicate the matter by generally conceding to the institution the kind of control over their children that they wish they had at home. This is well depicted by an event at UCLA. Students in the dormitories protested the paternal quality of administrative regulations.

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[1] Ad Hoc Committee on Residence Hall Operations, *Report of the Ad Hoc Committee* (mimeographed), 1964.

[2] "Information Book," Residence Halls, University of California, Berkeley, 1964–1965.

[3] *Daily Californian*, March 7, 1965.

The housing and counselling authorities investigated, polling students and administrators. They discovered that personnel were often opposed to the policies, the business office did not favor them because of the expense of "policing"; the students agreed that it hindered their academic as well as social lives. Letters were sent to parents informing them of the situation and the proposed changes in dorm rules. Overwhelmingly, the parents protested the rule changes. T. Roger Nudd, who related the experience, hypothesized that the response came because the parents felt they were losing authority over their children. The University could, at least, function as that authority.[4]

Parents tend not to recognize that the University must function impersonally—without knowledge of individual circumstances—making it virtually impossible to build a trusting relationship with students. The Group for the Advancement of Psychiatry examines this issue in *Sex and the College Student:*

> The conflict draws attention to what may be a fundamental flaw in the capacity of an institution to act as surrogate parent even in the presence of a strong sense of institutional responsibility. Parents have certain advantages that colleges lack: some consistent knowledge of their offspring over the entire course of his development; the flexibility of supporting privacy or intervening as the particulars of the situation indicate; and the essential privacy of the family role that may have to stand some test of public opinion, but certainly is not subject to review by committees and press. This may suggest that the institutional role of acting *in Loco parentis* is simply unworkable.[5]

The University states that, "It is taken for granted that each student has an earnest purpose and studious habits, and that he will adhere to acceptable standards of personal conduct."[6] But this stated trust in student maturity is betrayed by many regulations.

Eric Hoffer makes it clear that an assumption of immaturity can be unjustifiable:

> . . . Clearly, the childish pattern is not confined to people with 'some defective quality' which keeps them from growing up, but may arise or be induced in all types. . . . The reasonable approach is to assume that the adolescent's behavior is induced largely by his mode of existence, by the situation in which he finds himself. This would imply that adults, too, when placed in a similar situation would behave more or less like juveniles.[7]

The regulations most irritating to students are those implying they are not mature enough to run their own lives on their own terms—particularly their sex lives. Controls involving curfew, men-women visiting protocol, and the use of their own room are most often cited by students.

Some observers have noted the relationship between maturity and privacy. The authors of *Sex and the College Student,* make the point that:

> The process of personal growth and development requires respect of privacy. The principle of *in loco parentis,* however, appears to be in direct conflict with the principle of privacy, and this is an important reason for the persistent, serious questioning of the institutional role as parent.[8]

We do not contend that rules are unnecessary. Clearly, many younger students find some comfort in reasonable rules which guide their first year away from home. But students want to feel that rules are responsive to their needs. Too often they are left with the feeling that rules and the way they are administered reflect the condescension of an older generation. Edgar Z. Friedenberg writes that,

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[4] Nudd, T. Roger, "Re-examination of Closing Hours for College Women," *Journal of College Student Personnel,* Vol. 5, No. 3, March, 1964, pp. 170–175.

[5] Group for the Advancement of Psychiatry, *Sex and the College Student,* Report No. 60, Mental Health Materials Center, Inc., New York, 1965, p. 96.

[6] "Information Book," *op. cit.*

[7] Hoffer, Eric, "A Time of Juveniles," *Harper's Magazine,* June 1965, p. 18.

[8] Group for the Advancement of Psychiatry, *op. cit.,* p. 95.

> . . . the assumed incompetence of youth has been institutionalized so that it has become a vested interest of millions of teachers, school administrators, and law-enforcement and surveillance personnel, whose social function would be seriously jeopardized by any major recognition of the capacity the young possess for autonomy. Youth's disadvantages are not accidental; they are created, as a matter of social policy, in the interests of social groups more powerful than they—groups who are not about to disappear.[9]

There are times when students need and seek advice from older people. But again, *in loco parentis* policy can be self-defeating. The elaborate bureaucracy of resident advisors, housemothers, student deans, etc., makes the possibility of contact on any meaningful level remote. In this respect *in loco parentis* remains an administrative fiction rather than a positive force. When they need advice, students go elsewhere or get along without it. One girl said sarcastically, ". . . there is a feeling of closeness . . . we have one mother to nurse 200 girls. . . . The *last* person I would take my problems to is the housemother."

"Lockout" rules and the related issue of sex-in-college are easily the most controversial *in loco parentis* regulation. Students who have left the dormitory speak of the "psychology of curfew," and the relaxing feeling that it is no longer "hanging over your head." One girl explained, ". . . it's not a matter of being able to stay out late—the hours are liberal enough—but if there is a 2:15 curfew you can't come home any earlier or everyone will think that your date is a complete failure."

Lockout is explained as a way of setting limits which a coed might not be able to set for herself. Meyerson[10] writes that lockout says 'no' for girls. We have yet to hear that explanation from a coed. Because of the "either-or" character of lockout rules, late coeds may be forced to stay out all night rather than take a penalty for being 20 minutes late.

In addition to lockout rules, regulations controlling women's visiting hours in undergraduate's rooms are frequently debated. Dr. Graham B. Blaine, Chief Psychiatrist of Harvard University, believes that universities unwittingly turn dorms into "love nests" by permitting visiting hours between sexes.[11] Blaine goes on to suggest that when students have limited access to each other's rooms, they are virtually pressured into a type of sexual activity that neither really wants. Our interviews showed no indications that this was the case. Most students expressed the opinion that such matters should be left to their judgment—but realized that the dorm had been designed on a "no sex" premise.

During a visiting hours debate at Harvard, John Kenneth Galbraith wrote, in a letter to *The Harvard Crimson:*

> . . . Once when Harvard College was in part a privileged academy for the socially visible, it needed to assure parents that their more retarded offspring would have the supervision of men of the scoutmaster type who, however ineffectually, would try to protect them from the natural penalties of indolence, alcohol or lust. . . . All this, happily, is now over. Thousands of men and women clamor for admission for the serious purposes of the university. It can be part of our bargain that they look after themselves.
>
> Accordingly, rules need only reflect the special requirements of the academic community—the quiet, good order and opportunity for undisturbed sleep

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[9] Friedenberg, Edgar Z., "A Minority in Need of New Rights," *The Young Americans*, Time-Life Special Report, 1966, p. 87.

[10] Meyerson, Martin, "The Ethos of the American College Student: Beyond the Protests," *DAEDALUS*, Vol. 95, No. 3, Summer, 1966, p. 724.

[11] *Daily Californian*, May 18, 1966.

> that facilitate reflection and study. No effort need be made to protect individuals from the consequences of their own errors, indiscretions or passion.
>
> . . . There will be misfortunes, but it will be recognized that these are inherent in personality and not the result of failure of efforts to control it.[12]

Edward Eddy, Chatham College President, placed the whole sex issue in a wider context. He suggested that institutions take a profound look at their housing policies and consider the implications:

> . . . I do not believe that any problem of immorality on a college campus is solved by public, presidential proclamations. Too many colleges lean on such professed standards in order to protect their own good name, without first placing emphasis on the individual human being. If institutions have any value to society, they will survive the occasional incidents of human weakness—but the individual is more susceptible to damage than institutions and the college's primary, overriding concern ought to be for people, not for its institutional image in the mirror or in the local mind.[13]

Rules influence the form of student housing as well as the decision to house students. *In loco parentis* programs and procedures are an important determinant of the number and organization of building entrances, separation of public and private areas, provision of large public spaces, and the architectural image of the building. Rules can change, but the form of the building is relatively inflexible. Buildings designed with control in mind will tend to perpetuate anachronistic rules—or the buildings themselves will meet early obsolescence.

All these considerations are tied to the image of the dormitory in the eyes of parents, alumni and local taxpayers. For example, discussions with Berkeley housing administrators and a review of the design program for the high-rise complex indicate that the image of the dormitory as a safe, clean, orderly collegiate environment is a prime form determinant. The problem arises when these determinants conflict with the attitudes and life styles of the various students *using* the building. The design problem lies in reconciling various public images of how students should live.

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[12] Galbraith, J. K., "Other People's Letters," *Esquire*, December, 1965.

[13] Eddy, Edward D., "What About the 'Sinful' Student?," *Saturday Review* March 19, 1966, p. 71.

CHAPTER IV

Some Design Proposals

OUR EVALUATION at Berkeley and additional surveys of student housing conditions across the country lead us to some conclusions about student housing needs and how they may be met through design. Following are a definition of needs and performance specifications for (1) room furnishings and personal space arrangement; (2) the room; (3) common living space activities and facilities.

Providing the housing characteristics that students want is no more expensive than what is now generally being built. The gross space per student to provide the single room illustrated, including common living space and circulation, is less than 250 square feet. An eight man suite of four doubles averages 160 square feet.

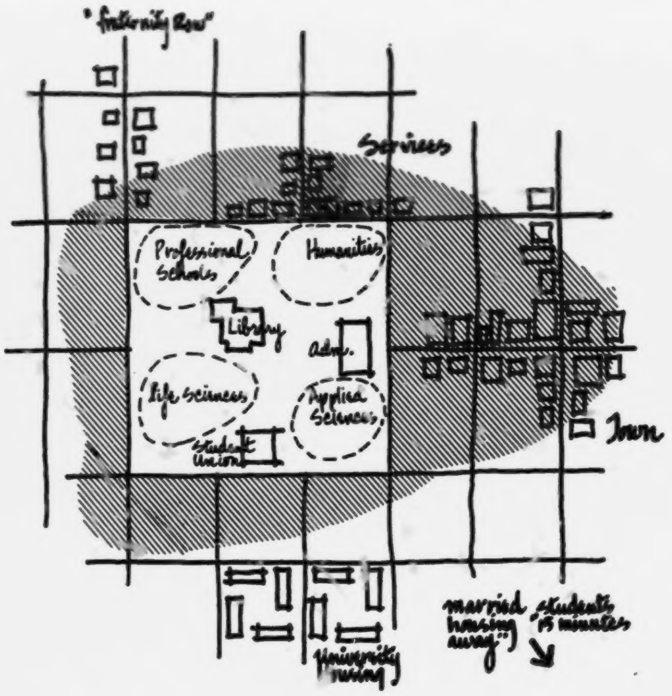
In addition to innovations in the design and construction of student housing, new financing mechanisms are required. Much of the student housing built in the last decade was financed through long-term, low interest Federal loans to institutions. We propose that a long-term low interest loan program similar to the Senior Citizens loan program administered by the U. S. Dept. of Housing and Urban Development under Section 202 of the National Housing Act be made available to non-profit student housing cooperatives. They know student needs better than the institutions themselves, and generally operate lower cost housing to the greater satisfaction of students. For example, Berkeley's University Student Cooperative Association provides room and board for more than 800 students at a cost one-third less than that of the dorms. College students are an increasingly formidable pressure group that need housing. The greatest impetus to better student housing would be "easy money" for legitimate student associations to build themselves new housing.

A Linear Core for an Organic Campus

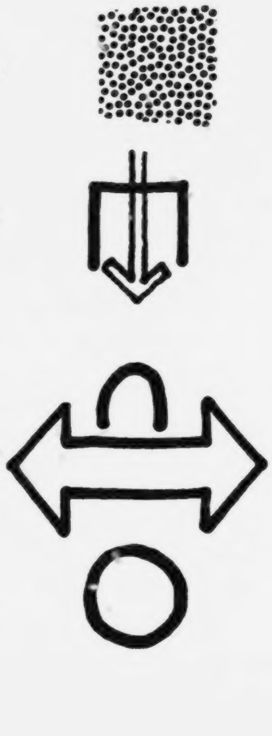
The idea of a campus spatially segregated from its surroundings and divided into zones such as teaching facilities for the humanities, life sciences, engineering, etc., faculty offices, student housing, campus services and administration, causes much of the impersonality and dysfunction on large campuses. There is often friction where town surrounds the campus enclave. The problem is not only to break the whole into smaller parts, but also to find a new pattern for integrating activities and building in channels for face-to-face communication.

In the typical zoned campus, many large single-purpose spaces are underutilized. The zoned campus results in many distinct "territories," such as "fraternity row," and the dorm blocks, on a large scale, with no common ground. The segregation of activities—such as all faculty offices in an office building—discourages informal communication between faculty and students. Mass institutional feeding is disliked by students because of its impersonality, fixed times, rushed atmosphere and poor food, lack of variety. They prefer a variety of eating places close by and linked to other services.

Our proposal focuses on one aspect of this problem: creating a campus core that belongs to the entire community. The typical campus segregates itself from surrounding "non-academic" activities. Around its edges spring up enterprises that cater to the campus community and create its particular character: book stores, coffee shops and entertainment, places to eat and lounge, as well as retail stores serving students. We propose that this pattern be rationalized so that the campus mall becomes a logical meeting place for the campus community. The mall absorbs the functions of student union, faculty club, residence hall lounges, dining rooms, seminar rooms, and theatres. Housing, teaching and research facilities feed onto the mall. Following the example of successful shopping centers, at each end of the mall and linked to the surrounding community are major activity generators such as the library and parking structures.


"fraternity Row"
Services
Professional Schools
Humanities
Library
Adm.
Life sciences
Applied Sciences
Student Union
Town
University housing
"married housing
students 15 minutes
away"

1. The "*Zoned Campus*"

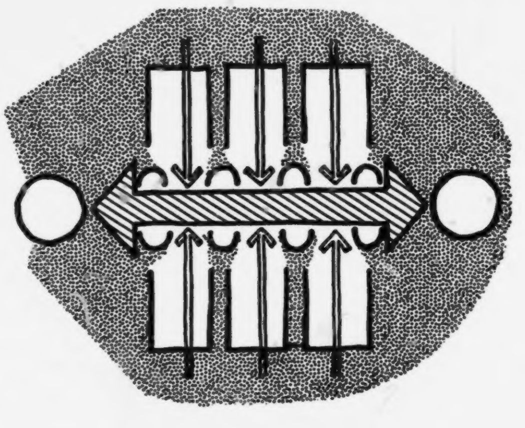


Town

Campus Space
academic, research, teaching, offices, housing

Commercial-Intellectual Marketplace and Mall
including campus retail stores and services; eating and lounging places; places to be and be seen; informal academic space; entertainment areas.

Major Activity Magnets



2. The "*Linear Core Campus*"

FURNITURE AND EQUIPMENT

User Needs:

1. Students want to rearrange their furniture from time to time.
2. Bed is a popular study location.
3. Desks must permit comfortable study involving two or three books, typewriter and papers.
4. Desk chair must permit free shifting, tilting, leg stretching, etc., comfortably; when students cannot make such adaptations they are likely to have less productive study sessions.
5. Students occasionally try to visually "break-up" their room-space. Movable closets provide a needed barrier.
6. Students want to extensively "personalize" their rooms; this involves tacking, painting, hanging, etc., on wall surfaces.
7. Because student residents come and go, housing administrators want to periodically return rooms to original conditions at minimum cost.

Specifications:

1. All components are movable (e.g. all furnishings may be rearranged by two freshman girls).

2. The bed unit can be either free standing or hung from the wall (at student's discretion), bed unit includes adjustable backrest, integral lighting fixture, swing-away night table.

3. Desk unit has minimum dimensions:

45" long 24–30" wide 28–30" high

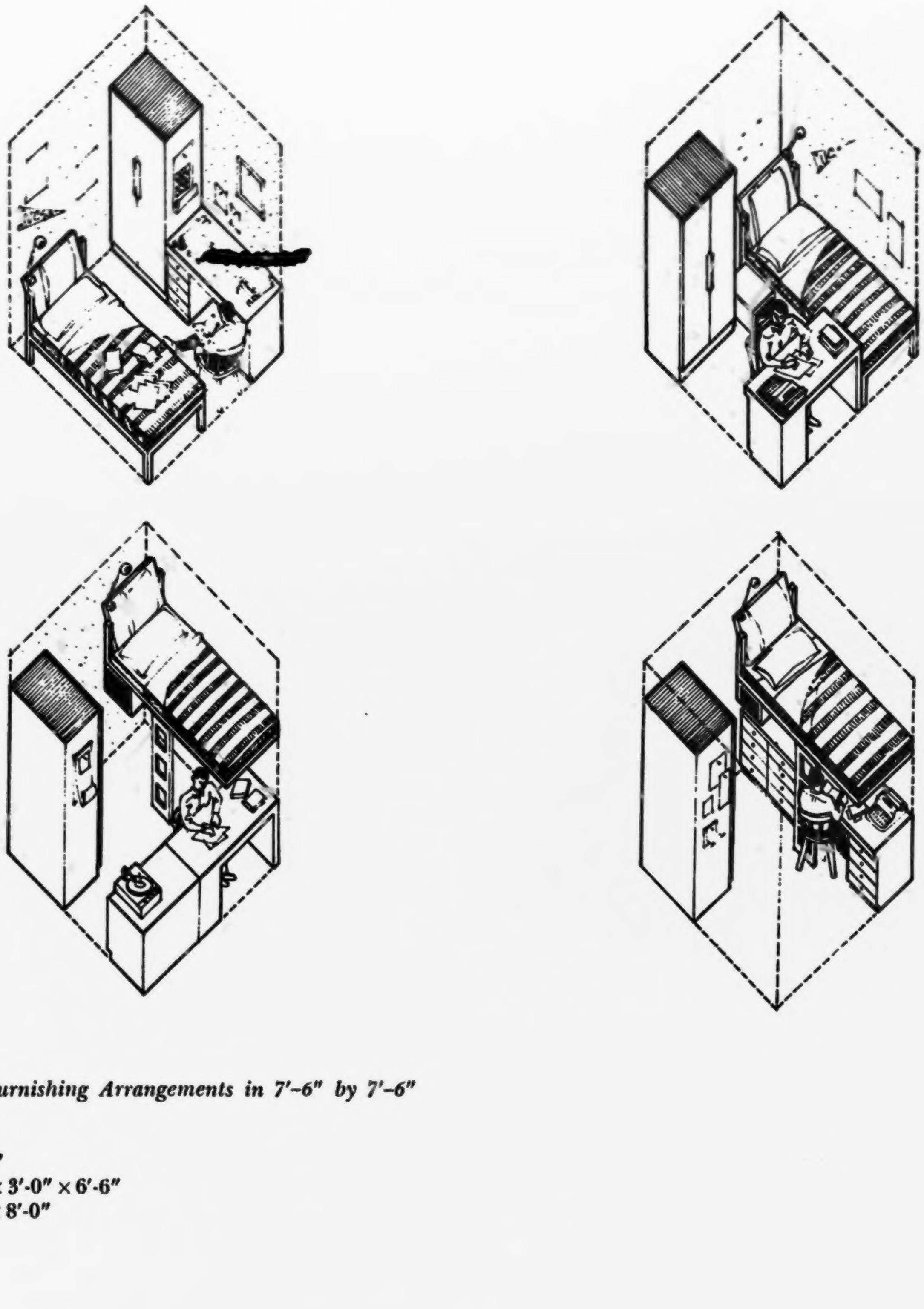
There is adequate clear-space beneath desk for stretching and crossing legs; desk unit includes soft-covered tilt-back chair (doubles as an easy chair).

4. The closet unit is free-standing and movable; it may contain drawers and double as a dresser; optional free-standing bureau (compatible with desk height for added surface). Some minimum dimensions for closet unit:

Full length hanging space: 60" high 20–30" wide
½ length hanging space: 30" high 16" wide
24" closet depth

The external surface of closet (back, sides, front) is usable as tackboard surface.

5. Wall surface panels provided for painting, hanging, etc.; panels are movable and are dimensioned 7′6″ × 4 or 7′6″ × 8; panels may be installed and replaced without complicated tools.



Typical Unit Furnishing Arrangements in 7′–6″ by 7′–6″ space.
bed 3′-0″ × 6′-6″
desk 2′-0″ × 4′-6″
wardrobe 2′-8″ × 3′-0″ × 6′-6″
pinboard 7′-6″ × 8′-0″

ROOM

User Needs:

1. For the most part students want single rooms; a few, usually incoming freshmen, will prefer double rooms; some students will accept roommates to reduce costs.

2. Some students will want to change from double to single accommodations as they progress through school.

3. In general, students want choice in the cost of their accommodations; they want to choose from a variety of living conditions; various amenities, single or double, etc., according to their pocketbook needs.

4. Student residents will want to put up an occasional visitor; off-campus commuters may want to rent sleep and study space for one or two days/week only.

5. Even when sharing a room students want a personal space (capable of containing all their furnishings and equipment) that is visually separate from their roommate.

6. Students prefer privacy in bathrooms; for the most part they resist "gang bathrooms."

7. Students want to have visitors in their quarters without inconvenience to others.

8. Acoustical privacy is an essential students require of their rooms; double doors with buffer space is a sure way of providing this kind of privacy.

9. Students may want to come and go in their private space without running into others from their shared living space.

10. Total space per student should not, for economic feasibility, exceed 250 square feet or $5000.

Specifications:

1. All rooms are of three types:
   a) strictly single rooms
   b) optional, single or double rooms
   c) strictly double rooms
   (Note: types b and c can accommodate visitors, e.g., commuters needing an occasional sleep/study space.)

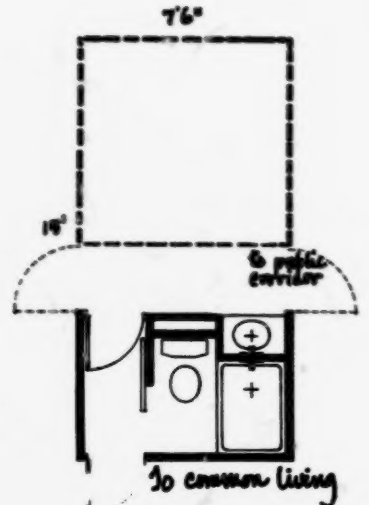
2. All rooms are based on a 7′6″ module; each module capable of containing complete personal territory for one student; bed, storage, and desk in a visually protected space.

3. Each room has its own bathroom core.

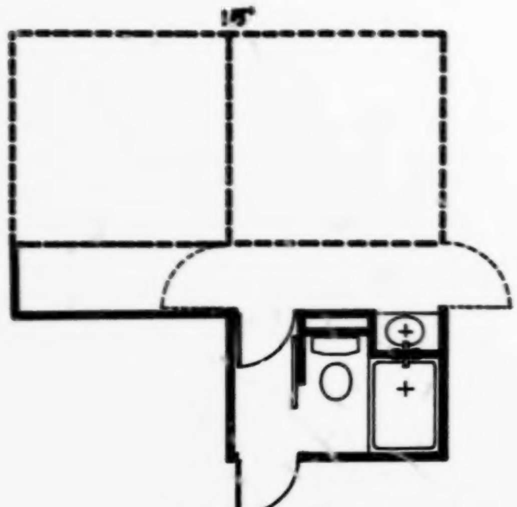
4. Each room has two entrances:
   a) one entrance directly onto public passageway;
   b) one entrance to common living space shared by several other rooms.

5. Each entrance has two doors separated by a usable acoustic buffer space.

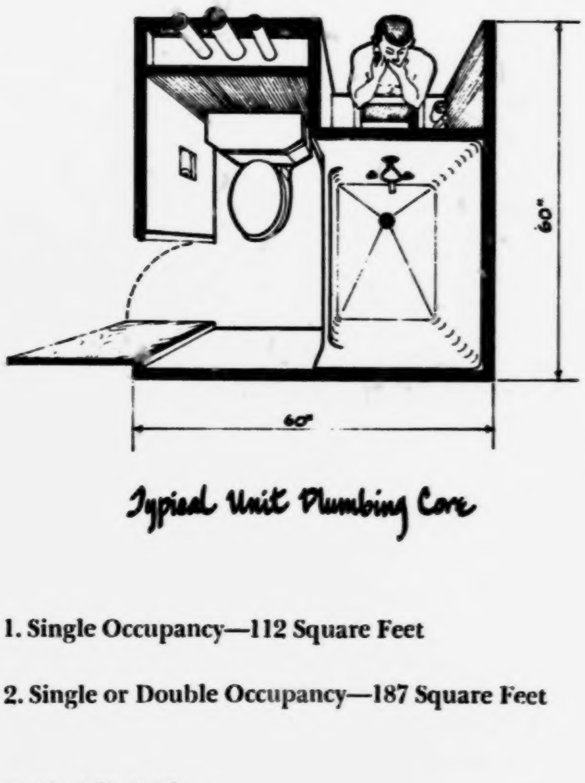
6. Each room receives natural light from at least one window; the window is at eye level for a person both sitting and standing.


7'6"
15'
to public corridor
To common living

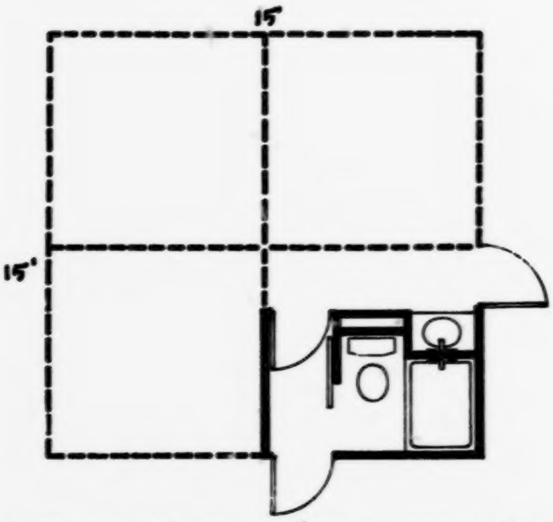
Single - 112 sq. ft.



Single or Double - 187 sq. ft.



Typical Unit Plumbing Core



Double or Double + transient space - 225 sq. ft.

1. Single Occupancy—112 Square Feet

2. Single or Double Occupancy—187 Square Feet

3. Double Occupancy (with guest space)—225 Square Feet

4. Typical Unit Plumbing Core

Typical Unit Plans

COMMON LIVING SPACE

User Needs:

1. Students want to make an occasional meal or snack for themselves (assuming a large nearby cafeteria is used most frequently); on such occasions students want to have a few friends join them.

2. Students will use a shared living room for occasional parties, study seminars, etc.

3. Students studying in their individual rooms will want to take a break for snacks, talk, etc.

4. When more than 4 people share kitchen facilities, it is difficult to assign responsibility for clean up.

5. Students will want to have coed privileges in the common space; *in loco parentis* regulations may require special entrance into common space from public passageway.

6. Students preparing food will want to keep up conversation with friends in the living space.

7. More than one student will want to be using the galley at a single time; preparation areas will have to be accessible from both sides.

8. While cooking and making snacks, students don't want to be more than seconds away from their rooms.

Specifications:

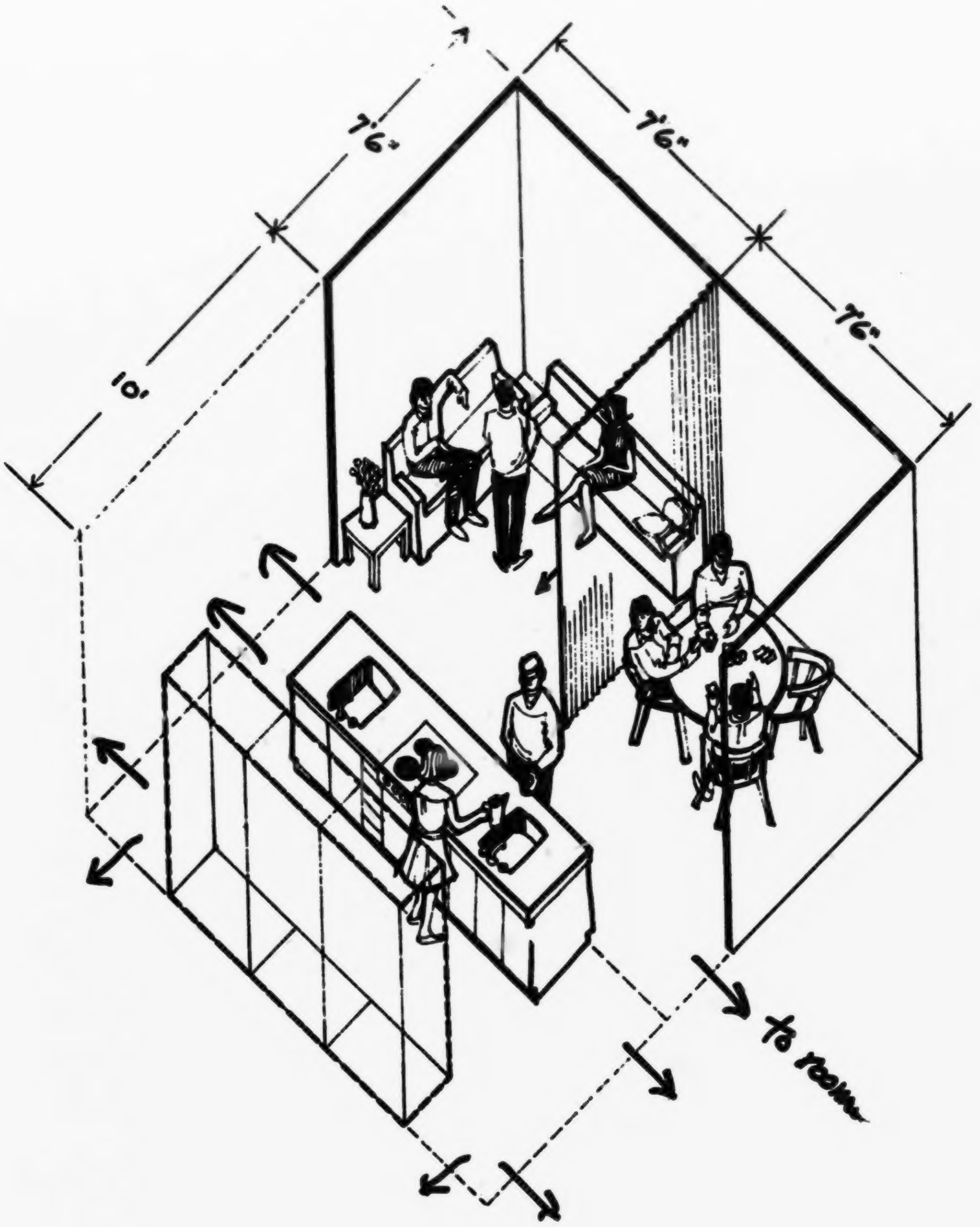
1. One common living space (with kitchen galley) for every 4–8 students; the common space contains two alcoves seating 4–6 people each for eating, visiting, group study, etc.

2. Student cooking in the galley can see and talk to others in the living space.

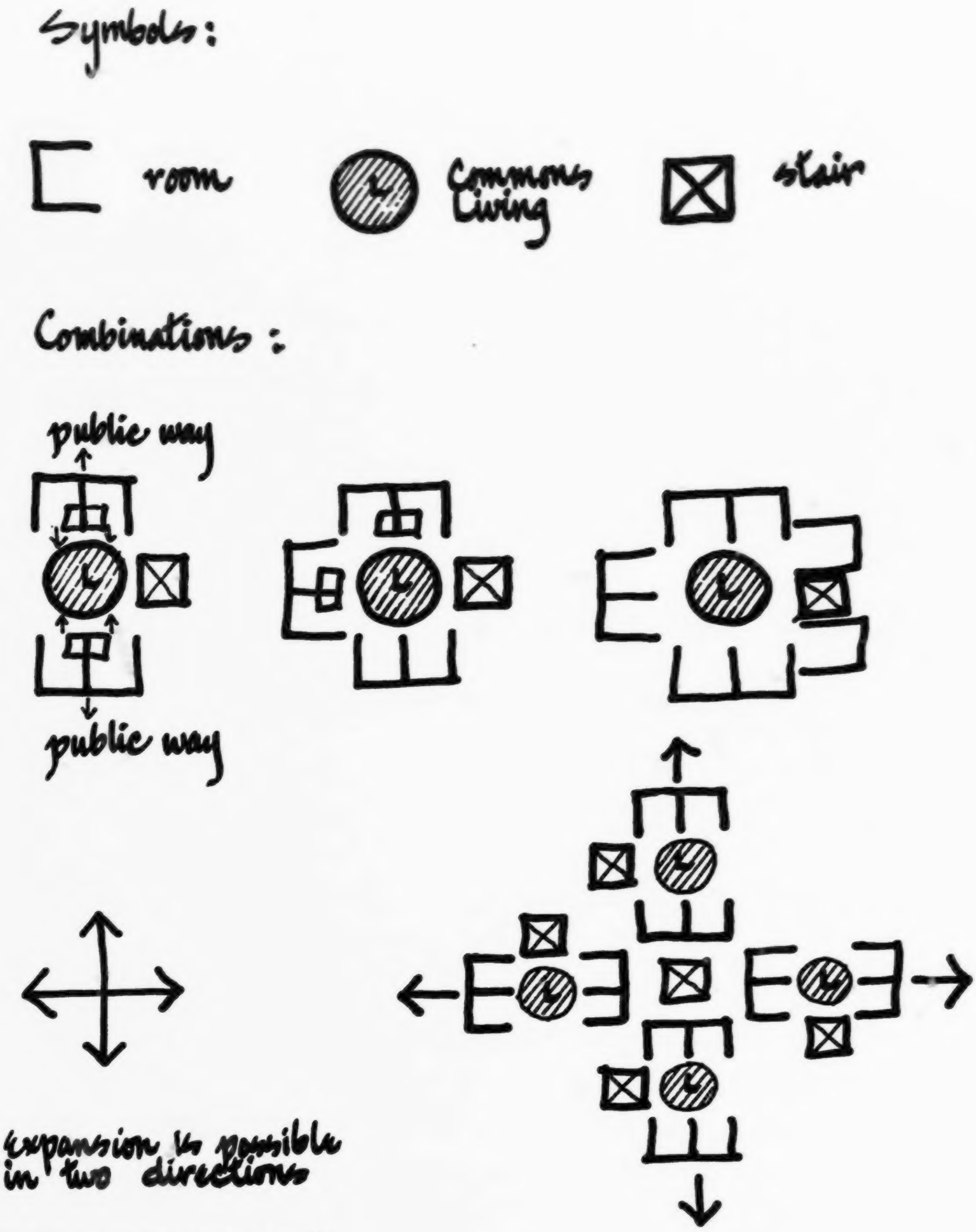
3. Galley counters, sinks, etc., are of the "island" type; they allow work to go on around them, and not from one side only.

4. The galley has two distinct preparation areas along with two hotplate burners, two sinks, individual cupboards and 2 cu. ft. refrigerated lockers for each student room; galley unit includes one oven.

5. The common living space opens directly onto public passageway or stairs, as well as to each individual room it serves (through double doors).

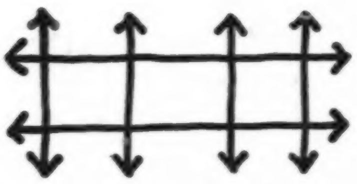

7'6"
7'6"
7'6"
10'
to room

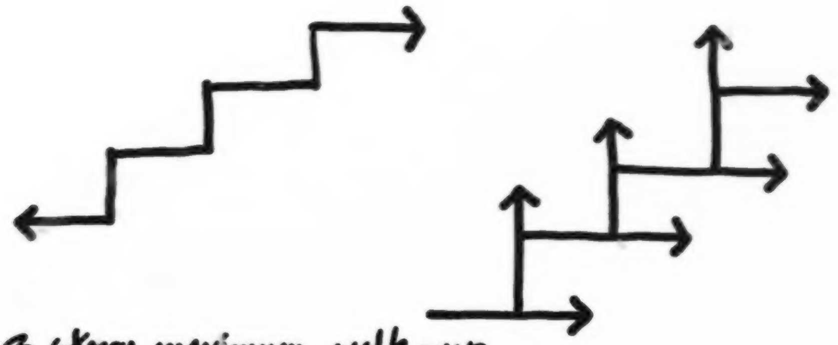
Common Living Space

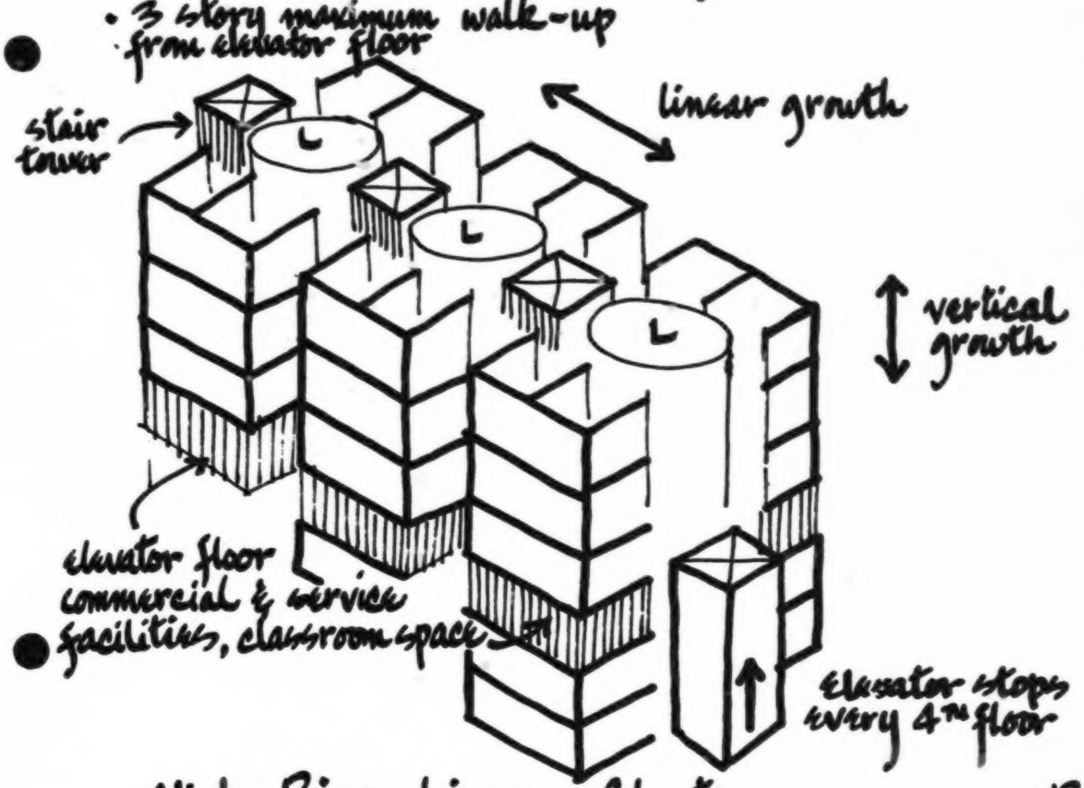

Symbols:
room
Commons Living
stair
Combinations:
public way
public way
expansion is possible in two directions

Housing Configurations
The Room, Common Living Space, and Circulation are the basic elements combining to yield various housing configurations.

- Or any combination . . .
including High Rise . . .

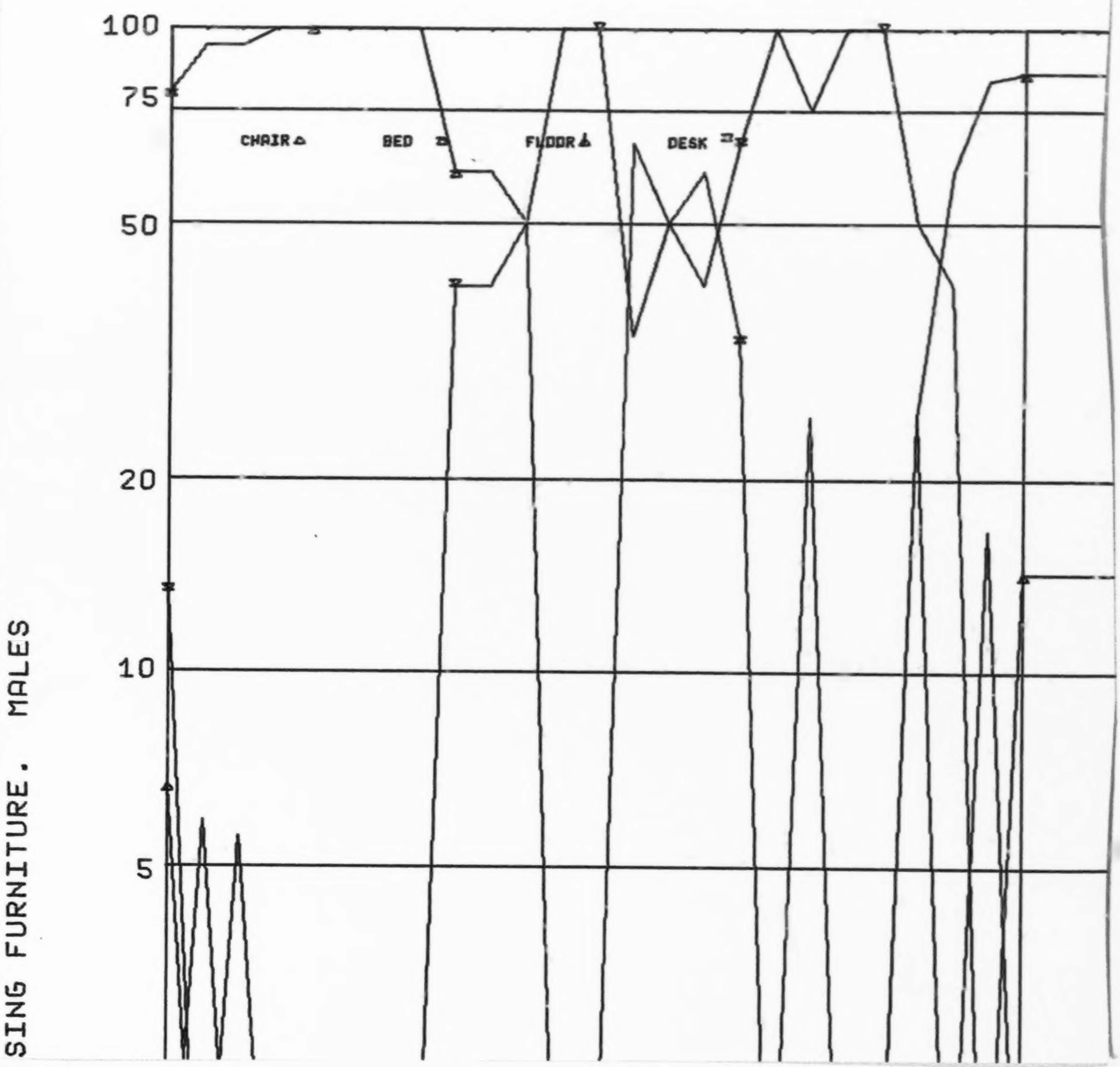





• 3 story maximum walk-up
from elevator floor
linear growth
stair tower
vertical growth
elevator floor
commercial & service
facilities, classroom space
Elevator stops
every 4TH floor

High-Rise Linear Cluster

p. 7


SING FURNITURE. MALES
100
75
50
20
10
5
CHAIR △
BED
FLOOR
DESK

CHAPTER V

Methods For Evaluating Building Performance

Context

THERE ARE A number of field methods which can be used to study buildings and how people use them. These methods have generally been applied to study isolated aspects of environments. Our aim was to make an integrated analysis of a dorm environment. Since there were few precedents, the investigation was frankly experimental. Because there was little predetermined research design, we tended to work in a piecemeal fashion, trying out various methods and seeing what happened.

The techniques used to analyze the high-rise dorms in Berkeley included a review of the building's history, program, design, and the polcies behind them, observation in the building, user questionnaires, interviews, and "diaries" kept by the residents themselves. We wanted to obtain reliable data and make accurate measurements, yet we were wary of using our limited resources to quantify irrelevant phenomena. *Easily quantified data are often irrelevant to design decisions.* Despite our caution, we found ourselves in several blind alleys.

The methods discussed were adapted and applied by four undergraduate architecture students and a faculty project leader, working part-time over a period of four months. The objectives during this four-month period were two-fold. First, we sought to develop methods of environmental analysis useful to administrators and designers interested in evaluating existing facilities in order to clarify design objectives, and the means to achieve them. In addition, we hoped to acquire insights into actual activity patterns in a reasonably complex physical setting, and to see what design issues were raised. We were less interested in hard data of sociological or psychological significance than in obtaining, with some accuracy, a rough picture of conflicts between student activity and a dormitory setting.

As we have noted, environmental analysis has evaluative, informative, scientific, and innovative functions. Of these four functions, analyses of evaluative or scientific value are more costly, since they imply precise measurements and controlled experimentation. Often, however, preliminary reconnaissance of an environment can quickly yield information of great importance to the designer in avoiding gross errors and developing a program for future facilities. In planning a strategy the researcher should ask himself, "What do we hope to find out? Is the cost worth the potential knowledge gained? Is the potential information relevant to the problem? What degree of precision is required to make data usable and reliable?"

Methods of environmental analysis are tools in the formulation of policy, program and design affecting large institutional building programs. Seen in this light, the cost of analysis can be spread over a large volume of construction. The costs of environmental analysis should relate to improving the effectiveness of the institutional program. The consequences of environments that don't work well for people are often difficult to measure directly in relation to the institutional balance sheet. Often it is the user and his community, rather than the institution, who pay the psychic and social consequences of ill-fitting environments.

Observation

Observational methods record behavior as it occurs. Since they are involved in what people *do,* rather than what they *say* they do, observational techniques assume an important place in environmental research.

The success of observational methods depends primarily upon the observer's having a clear concept of what it is he is looking for. This suggests that researchers must first develop working hypotheses about what is going on in the environment under inspection. It is important that these hypotheses have clear utility as design information. We could never arrive at intelligent design directives by sitting in a lounge, for example, and notating "everything" that occurs. If, on the other hand, we can state clearly how the lounge *might* be functioning—"lounges tend to be used by individuals and dorm 'loners' and are rarely the scene for spontaneous group activity"—systematic observation can verify or disprove the hypothesis. In short, decisions should be made about what to look for, and the utility of the information to design should be self-evident.

The behaviors we observed and measured were selected from interviews and early reconnaisance on what activities were important to students. We were particularly interested in the relationship of college housing characteristics to the larger set of activities which define student life.

Regardless of which hypotheses the researcher chooses to test, it is important to provide the observer with concrete examples of the activity he is looking for. A definition of social interaction, for example, should consist of a decision rule for categorizing some behavior as an instance of such interaction. For our investigation of hallway use, we originally defined social interaction as "whenever verbal exchange occurs between two or more individuals." This definition proved relatively weak since it included a large variety of interactions and ignored the possibility that some verbal interactions may be more important than others. By amending the definition to read "meaningful verbal interchange" its discriminating power was increased. At the same time, however, reliability may suffer as a strain is put upon the observer who must distinguish between "meaningful" and "meaningless" interaction. This situation was remedied by providing a sub-definition of the term "meaningful." The point here is simply that the observer should have in mind *communicable rules* for deciding whether an observed behavior among many other behaviors is an example of the hypothesis being investigated.

Once again, observation is useful for design purposes only to confirm or cast in doubt a hypothesized relation between human activity and the physical environment. Systematic observation often points up behavior that people normally take for granted. Information of this sort seldom comes out in interviews. Here is an example: observation in the dormitory led to a hypothesis about differences in the way men and women adapt to buildings. These differences were not apparent with the use of other techniques. Observers noted that boys knocked and entered their friends' rooms simultaneously while girls usually waited until their knock was formally acknowledged. Traveling from their rooms to the bathroom, boys were not particular in their dress, while girls tended to put on a "public face." One hypothesis was that the girls' world of personal space is bounded by their room—the corridor is "outside." For the boys, personal space seems to include the entire floor.

The observation program we developed dealt with relationships between corridors and spontaneous social interaction. We suspected that the corridors were an important setting for accidental meetings, group bull sessions, and other social interaction processes. Since the halls were not designed to cope with these conditions, we further projected that noise from the "corridor society" would affect study habits throughout the floor. Finally, we were interested in differences in the quality and quantity of interactions between floors that had lounge rooms and those that did not. Specifically, we hypothesized that on floors without lounges, students looking for places conducive to informal verbal exchange would use the corridors or someone's room as a public meeting space, and that this situation would tend to conflict with students trying to study. Our general orientation was to examine informal social interaction with reference to the corridor, and discover where it conflicted with other student activities. Observers sat in the hallways on various floors throughout the dorimitory complex. They noted interactions at various times of the day for fifteen 2-hour periods spaced over 6 weeks. The hours and days were selected at random. With a carefully selected sample it is possible to obtain a fairly accurate picture of the system. This process was preceded by at least one full week of informal observation by each field worker. During the formal and informal periods observers were instructed not to "read" meanings into what they saw—for example, if only verbal interactions were being recorded, then the impression that one subject appeared depressed was irrelevant. The object was to stick as closely as possible to the substantive meaning of the behavior.

We anticipated the "observer effect," that is, the interference occasioned by the observer himself, who must become a part of, and therefore influence, the system being studied. To compensate, we enlisted, whenever possible, the cooperation of the students being observed. This was accomplished by explaining to anyone who asked, both the goals of the research and the uses to which the information would be put. As long as the participants are not told anything that might prejudice the outcomes of any hypotheses being tested, there is no reason not to communicate the purpose of the research to them. A common goal in architectural research is better accommodations. The students in the Berkeley dormitories found this possibility rather appealing. One wrote to us, "I appreciate the fact that someone is at last attempting to make some 'humane' reforms. Thank you." We are inclined to believe that incentives of this nature are sufficient to lower the defense barriers people erect when they think they are being "watched."

Interview

In the first stages of environmental analysis, interviewing is the fastest and cheapest source of good information. Early interviews can reveal broad classes of variables and points of conflict between function and form. When the interviewer finds he has reached a saturation point and information becomes redundant, he can isolate a series of verbal abstractions which begin to describe problems indicated by the interviewees. For example, in our college housing interviews, these abstractions included "noise between rooms and corridors," "hard to meet people not living on your floor," and "study conditions break down at certain time every evening." These generalizations can be refined into a set of working hypotheses and tested systematically through observation and questionnaire.

Our interview program began with a series of Saturday afternoon sessions held in a campus building. Three to five dorm residents were interviewed at each session in round-table fashion. The interviewing team consisted of four undergraduate architecture students directed by a consultant. These sessions lasted about one hour and were followed by lengthy discussions among the interviewers regarding the material covered. In addition, over 40 interviews were carried on *in* the dormitory on a one-to-one basis. Every interview was recorded with the consent of the students and later transcribed. Of the two interview types, more information was generated by the sessions held in the dormitories. There are three possible explanations for this. First, the Saturday sessions acted as training grounds for the architecture students involved (who later became the dormitory interviewers). Second, the interviewees seemed more at ease and receptive in their own environment. They found it easier to speak of the building as related to functions of student living when they were inside it. The Saturday interviewees, questioned in the architecture building on campus, had a preconceived notion of what type of information would interest architectural researchers. They talked more about "looks" and aesthetics: what they considered "architecture." Finally, the one-to-one nature of the dorm interviews made it easier to exhaust the subject's information on any one area. Two or more interviewers often open multiple lines of "attack," thus weakening the continuity of a line of questions and confusing the subjects.

For interviewing data to be useful, it is not necessary to hold a formal theory concerning the phenomenon being studied. However, the interviewer must still decide upon a set of specific objectives toward which interview questions are directed. These objectives may change as the interviews proceed, but, as in observation, the researcher should be as explicit as possible about the kind of information desired.

Interview questions can be either "open-ended" or "closed." In our study, "open-ended" questions included:

> "We have talked to many students about the dorms; could we get your ideas about the dorm?"
>
> "What were some of your early expectations about the dormitory?"
>
> "What were your first impressions of the dorm?"

When a good "open-ended" question was asked, the response led to follow-up questions. Consider the following response given by one of our interviewees to the question: "What's it like living in your dorm?"

> "Well, the rooms are very noisy. Especially when any of the doors to the rooms are open, the halls carry the sound. After 10 o'clock the noise is particularly loud. This makes it hard to study. You might as well give up after 10."
>
> "I've also found that the rooms are very cramped. It's difficult to arrange the furniture because of the smallness of the rooms. My roommate and I have tried a number of different arrangements and I think we have a good one now."
>
> "Another thing that bugs me about the dorm is that everything looks the same. The rooms all look alike, the floors, the colors, everything. Sometimes it's very depressing."

A number of follow-up options were available. We chose to continue with:

> "You said that after 10 you might as well give up studying. What do you usually do after 10?"

While still basically opened-ended, this question began to get at how the respondent deals with the problem. "Non-directive probes" were employed, urging the subject to elaborate on his answer:

> "I'm not sure I understand what you mean when you said, 'It's sometimes very depressing' in the dorm. Can you tell me a bit more about that,"

The non-directed probe is a useful technique to eliminate some of the ambiguity which arises through the use of generalized concepts, such as "depression," "variety," etc. The fact that a student was depressed is rather vague, unless he elaborates upon how it affects his activities. Other examples of vague concepts offered by the students were:

> "There is never any variety of form."
> "I feel a lack of privacy."
> "The dorms are like mazes."

This kind of ambiguity can be considerably reduced through the use of non-directive probes. The probes can focus and become more directed as the interview moves along. One student, explaining her "depressing" impressions of the dorms, said,

> "I just thought it was terribly depressing. The walls were dull, ugly and drab. Everything was green. I wanted to go back home. It was like coming into nothing. Everything was the same. There wasn't any variety in the building. I also found that I didn't like my roommate. I tried to put myself out for her but it wasn't much use."

Two issues are raised: the sameness of the dorm, and difficulty with the roommate. Both are potentially productive. We continued, "You mentioned that it was like 'coming into nothing.' Could you explain that a little more?" The respondent went on to suggest aspects of the environment contributing to the feeling of "coming into nothing." We found it helpful for the probes to use the same words that the interviewee has used. Paraphrasing tended to bring out our own bias on the problem.

Two special problems deserve mention. There are deficiencies in language for describing the physical environment. This may be due to research precedents which concentrate on social and psychological determinants of behavior. As a consequence, a good deal of our everyday language contains corresponding references as "explanations" of human behavior. The researcher should look closely for this bias in his analysis of interview information. Answers given to questions about behavior may also be influenced by the respondent's conception of what architects do. Responses are occasionally couched in terms of what the subject thinks you are interested in, such as practical or aesthetic considerations.

Questionnaire

Beyond its initial stages, there was a point of diminishing return in interviewing. When interviews no longer turned up new information, we moved to questionnaires. It was valuable for quantifying and analyzing student preferences regarding various features in their room. Here is one example: bunk beds were found to be highly undesirable. At first glance, we inferred that, at the expense of less usable room space, students did not want to sleep bunk style. However, questionnaire responses showed that beds actually served as desk and storage space during the day. For many girls, the bed was actually a "horizontal closet," used for clothes storage. Another inference, then, would be that for students who tend to use the bed for study and storage, bunking does not increase usable room space.

The questionnaire used in the dormitory study was developed and administered by the student research team. The objective was information on the use and suitability of furniture and equipment within the students' rooms. In addition to questions about how things in the room were used, and how often, furniture was rearranged, each respondent was asked to make a *plan* drawing of his room. Room arrangements were later categorized and examined for organizational tendencies.

The questionnaires were distributed by field workers on each floor in the 12 high-rise dormitories. Two or three questionnaires were left on each floor. There was no rigidly structured distribution procedure; individuals distributing the questionnaires handed them out to a cross section of room types (e.g., room next to stair; room with window looking west; etc.). Upon encountering a potential respondent, the field worker identified himself as an architectural student conducting research and mentioned that the results of the study might lead to changes in the dormitory. Questionnaires were collected by the field workers after they had been with the students for four days. In all, 115 students responded, 61 women (78% of questionnaires returned), and 54 men (42% of questionnaires returned). Since only one questionnaire was left in any room, each plan drawing represents the furniture arrangements for *both* roommates. The furniture arrangement analysis, then, includes 230 respondents, 122 women and 108 men.

Turning now to the selection of items for the questionnaire, we found difficulties similar to the problem of specifying objectives in the interviews. Since a general theory of behavior related to designed environment does not exist, the questionnaire items cannot be derived from theory alone. For the selection of items, we had to rely on our own experience, observational accounts, and interviews. The most productive source for drawing questionnaire items was the interview tapes. Responses to interview questions were often directly included as questionnaire items.

Our most common mistake was "loading" questions, and anticipating the range of student response. This is a common fault of market research techniques which often equate the answers to an arbitrary set of questions with "what people want." If the questions are not meaningful to the respondents, then the answers, no matter what their statistical accuracy, are irrelevant. Conclusions can be predetermined by "leading" questions and limiting alternatives. This can be particularly true of architectural research, for as one observer notes, "The consumer questionnaire approach has its drawbacks in that most consumers only picture a modified version of what they have now."

The students' room drawings proved a valuable addition to the questionnaire. The great variety of furniture arrangements—in space as limited as the dorm rooms—suggested several hypotheses. For example, we suspect that the very act of rearranging the room, and making it different from their neighbor's, gives students a sense of competence in dealing with an aspect of their environment. This may be of special importance to freshmen thrown into new, intensely competitive surroundings. The drawings themselves suggested new information. Consistent size distortion in the drawing of objects and relationships seemed to indicate what conditions the student valued. Some respondents grossly exaggerated the proportion of free floor space, drawing tiny pieces of furniture. Later it was disclosed that some of these students tended to study and work on the floor. Watching subjects complete the drawings and noting the sequence of objects drawn may also give clues as to how people use the space in which they live. For example, men tended to fill in and label *objects* in the room first while women concentrated on noting the properties of *surfaces.*

Nearly 20% of the respondents added their own comments to the questionnaire. These were not made in response to any specific question, but were written in the margin at the end of the questionnaire. These comments are important to us as confirmation of the problem issues.

Activity Log

The activity log, or student diary, is a cross between observation and questionnaire techniques. In this case, however, the subject is his own "observer." The student is asked not only to describe certain aspects of dormitory living, as in the questionnaire technique, but to do so in a continuous manner; this gives us the student diary, or activity log.

Self-observation devices have a special virtue. The information they provide gives a useful picture of the dynamics of space use over time. Even such a simple device as our measurement of dormitory "interruptions" can yield a great deal of information concerning actual student activity patterns. An additional virtue of self-observation is that data generated can be compared to information obtained from conventional observation methods; the result is a clearer picture of relations between user activity and building form in a residential environment.

After preliminary field observation and interviews have established parameters, the activity log may be the cheapest and quickest way of obtaining comprehensive statistical data on the questions of who, where and when, of building use.

The activity log developed for use in the high-rise dorms was aimed at quantifying certain characteristics of space use. We hypothesized that space utilization as specified in architect's drawings (i.e., "recreation room," "corridor," "lounge") would bear little resemblance to actual student living patterns, some spaces being used very little, other spaces used for functions quite different from those originally intended. Eighty students volunteered to record their activities over a four day period. On the log, respondents recorded what they were doing, where, and what furniture and equipment they were using each hour of the day. Direct field observation served as a partial check on this data. In addition, students were asked to record the number of "interruptions" that occurred whenever they were in their rooms. "Interruption" was loosely defined as any distracting incident relative to the activity in which the respondent was engaged.

At the end of the four day period the logs were collected. The information was then transferred to punch cards and scanned by the IBM 7094 computer with a program designed specifically for this project. Since we were interested in graphical as well as numerical correlations the program was adapted to the Cal Comp Plotter, permitting translation into graph form. The graphs provided a strong visual statement of space use over time. They enabled relations between activities, locations, furniture and frequency of use to be picked out and analyzed in a comparative framework.

This technique allows the building to be seen as a receptacle housing dynamic human processes. One correlation showed that during study hours roommates rarely occupy their room together. Another relation showed the bed as the key piece of study furniture in the entire dormitory. Students commonly used their desk as a storage surface and did their reading and writing sprawled across the bed. The logs also provide information on group activities—where and when students meet and what activities result; which of these activities tend to occur simultaneously and when they potentially conflict; and which activities tend to follow one another.

Self-observation techniques should be given high priority in architectural research. We believe the activity log form has strong potential for analyzing buildings whose users have different life styles and goals. In the case of the dorm procedure, two or more tests could be run during a school term—one, for example, at the beginning of a term and one towards the end. Analysis might show changes in activity patterns resulting from adaptations to building form, fellow students, and changing work patterns. The log can also be applied to different housing types. Comparison of activity patterns might then indicate behavioral tendencies peculiar to certain physical settings.

Literature Search

Traditional methods of literature search proved a valuable tool in digging out information on the Berkeley dorms, and in gaining perspective on relevant issues at other campuses. In addition to books and monographs dealing with aspects of student residential life, we relied on three sources of information: local newspapers, housing administrator's journals, and the architectural press. Each literature source has distinct limitations, but if reviewed in context it is useful. Literature sources are especially important in studies such as ours where the core of the research is non-comparative. They allow us to see if conditions uncovered in Berkeley show up in other places.

Local newspapers, particularly the student-operated *Daily Cal,* gave an excellent chronology of problems in the dorm. Certain issues were pervasive enough to find their way continuously to public attention. The six professional journals for housing administrators and personnel provided insight into the professional values and specialized concerns of this group of decision makers. The architectural press provided an inventory of current planning concepts. Unfortunately the reasoning behind the concepts is seldom made explicit. A review of the literature shows a number of different specialists meeting a complex problem with criteria acknowledged only within their respective professions. The architect's concern with buildings as visual objects is a case in point. It can result in rhetoric which is at odds with the most obvious facts. For example, Richard Dober, an authority on campus planning describing the site plan of the Berkeley dorms writes: "By placing the units along the perimeter of the site, the entire complex centers on the interior court, shutting out the none too pleasing environs." The fact is that the double-loaded corridor plan forces half of all the rooms to face *away* from the "court" looking onto "none too pleasing environs."

Analyzing the Data

The data obtained from interviews, questionnaires, and observation is a record of activities: who is doing what, where, when and how. The analyst's job is to identify constancies between form and activity.

Such invariant relationships express connections between human needs, forces, or tendencies and physical environments. These may be physiologically, psychologically or culturally based. Design problems result when needs are not readily accommodated by the environment and can find no adaptive outlet. Issues, as we have defined them, result when conflicting needs and values are not resolved by the environment.

In constructing relationships to explain behavioral data, the analyst makes a critical inductive leap. Good hypotheses never simply arise from collections of data. The anthropologist Anthony F. C. Wallace writes:

> "Fond illusion to the contrary, a hypothesis rarely springs spontaneously from a logically impeccable and all-inclusive system of definitions. Neither does it arise pheonix-like from a mass of data, because most data are irrelevant to any given hypothesis, unless they have been selected with reference to that particular hypothesis (which then must have existed previous to the collection of the data). Hypotheses develop after contact with the phenomena, as hunches, intuitions, informed guesses, subjective impressions—in general, in an undisciplined way which makes the over-rigorous

scientist most uneasy. Nevertheless, the most legitimate scientific technique is useless if it is not directed at the testing of such bastard hypotheses. Hence I feel justified in having spent a great deal of time and energy in spawning ideas, rather than in picking some definition or some datum and rushing to study it rigorously without consideration of the whole field in which that problem lies."[1]

In postulating relations between people and their environment, it is important to establish to what kinds of people the hypotheses apply. Any conclusion must take into account the characteristics of the users, and the self-selecting characteristics of any environment. For example, freshman students will use the dorm differently than a group that cuts across age lines and college experience. More freshmen live in the dorm. Comparative studies help to establish the relevant variables of limits for hypotheses.

There are three points which bear on how data is assessed. A good environment tolerates adaptive behavior by the user: conflicting needs can often be resolved by individual adaptation. Specifying the limits and context within which non-stressful adaptation can take place is more important than specifying conditions for optimal or "ideal" performance. A good environment lets people meet some needs for themselves.

Establishing limits of adaptation is, of course, a scientific problem of considerable magnitude. Ecologists and animal behaviorists have found that adaptive mechanisms themselves change over time. The Calhoun experiments, showing the direct relation between density in laboratory rat communities and forms of social disorganization, have now been supplemented by follow-up studies. Succeeding rat generations, adapting to high-density conditions, apparently developed what has been called a "New Yorker Syndrome." The early pathology was replaced by a situation in which the rats simply paid no attention to each other.

A second point is that the reasons for an obvious activity are not always clear, yet improving the environment requires knowledge of these subtle reasons. For example, many girls in the dorm dry their hair several times a week with electric hair dryers. Interviews revealed that a supplementary reason for this behavior is the need to screen out noise and achieve some privacy.

Finally, in assessing data we are concerned with relations that go beyond single variable correlations.

One research tradition concentrates on isolating and measuring small coherent "pieces" of behavior. In environmental research, most human engineers and behavior psychologists work towards correlations between physical stimuli and human or animal response.

There is vast and growing data of this type. Typical examples include correlations between lighting levels and reading efficiency, noise levels and task performance, instrument placement and reaction time, and temperature and human comfort. In the design of a complex system like student housing, it would be foolish to place too much emphasis on this type of data. It is not useful simply *because* it is quantified. *Isolated measurements do not in themselves provide a precise picture of a system.* They are only fragments with no glue to bind them.

An environmental system cannot be understood either through precise models of isolated events or abstract notions of activity. *In both cases the unit of investigation is wrong.* One is too fine, the other too gross. Neither permits us to construct a picture of the network of relations which structure the system.

---

[1] A. F. C. Wallace, *Housing and Social Structure;* also Festinger, Schachter, and Back, *Social Pressures in Informal Groups,* Harper and Bros., New York, 1950.

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